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POR-2036
(WT-2036)
VOL 4

Operation

DOMINIC

FISH BOWL SERIES

PROJECT OFFICERS REPORT— PROJECT 8A.2

OPTICAL PHENOMENOLOGY OF HIGH-ALTITUDE NUCLEAR DETONATIONS — FILM CATALOG (U)

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PREFACE

This catalog is a listing of film recordings from technical photographic cameras and optical instruments installed at several locations during the Fish Bowl Series.

The tables in this volume were extracted from POR–2036, Volumes 2 and 3. The table numbers are unchanged.

Most, but not all, film had good records. In a few instances, only short records exist on otherwise long films because of the short duration of the phenomena.

Questions relating to the availability of films or copies thereof should be directed to:

Chief
Weapons Test Division
Defense Atomic Support Agency
Sandia Base, New Mexico 87115

CONTENTS

* See also Camera Parameters Tables.

* See also Camera Parameters Tables.

DESCRIPTION OF CAMERAS

BEATTIE COLEMAN, Model E, data-recording camera system with great versatility achieved through the efficient interchangeability of standard components.

BELL & HOWELL, full-frame 35-mm motion-picture camera having a maximum continuous rate of 128 frames/sec. A speed of 200 frames/sec, however, can be used only intermittently for short periods of time.

CLOUD, 70-mm camera. In conjunction with suitable control and mounting equipment, was specifically designed to provide a series of photographic records of the cloud resulting from a nuclear detonation. Contains a data chamber which is recorded on a portion of the frame.

DYNAFAX, Model 326, high-speed continuous-writing framing camera, designed for motion analysis and velocity studies. A combined rotating drum and rotating mirror camera that offers a continuous range of framing rates from 200 to 26,000 pictures/sec.

EXACTA, fully automatic, hand-operated 35-mm single-lens reflex camera.

EYEMO TRAID, 35-mm motion-picture camera that operates at rates from 12 to 48 frames/sec.

FAIRCHILD, HS-100, 16-mm motion-analysis camera of the rotating-prism, continuous-film movement type.

FLIGHT RESEARCH, precision 35-mm instrument designed for data recording and yet sufficiently rugged to withstand the severe demands of field and airborne use.

GSAP, Air Force 16-mm gun camera, 16 to 64 frames/sec.

HASSELBLAD, single-lens hand-operated reflex camera with interchangeable magazine film backs permitting the use of cut film and 120-size roll film, frame size: $2\frac{1}{4}$ by $2\frac{1}{4}$ inches.

KC-1, aerial mapping camera with a 6-inch effective focal length f/6.3 lens to obtain approximately 450 to 460 negatives, 9 by 9 inches. Takes precise aerial

photographs for use in preparing topographic maps with the attendant pertinent data recorded during each exposure.

KFC-600, an ultra-high-speed framing camera that provides six separate frames of the same phenomena viewed along the same line of sight. Light collected by an f/3.5 objective lens is split into six separate beams by means of a six-faced prism. Each of the six optical paths contains a separate Kerr cell shutter and a separate film holder. By incorporating high-speed pulse techniques, the exposure times and interframe times of sub-microsecond duration are achieved.

LEICA, 35-mm, automatic, hand-operated camera.

MAURER, Model 220, 70-mm sequence camera pulse operated at rates up to 5 frames/sec. A desirable feature of this camera is its high shutter speeds that are not normally available at these low frame rates. This is accomplished by a focal plane shutter that provides exposure times of 2, 1, and 0.5 msec. The camera utilizes perforated 70-mm film and produces a frame size of $2\frac{1}{4}$ by $2\frac{1}{4}$ inches.

MINOLTA, SR-1 is a fully automatic hand-operated single-lens reflex camera using 120-size roll film.

MITCHELL, full-frame 35-mm motion-picture camera, having a maximum frame rate of 128 frames/sec. An outstanding feature of this camera is its ability to pin-register the film during exposure of each frame.

PHOTO PANEL, modified Eyemo camera, allowing it to be operated as a single-frame pulse-operated unit, to record aircraft attitude instruments during flight.

PHOTOSONICS 4C, rotary prism recording camera designed for high-speed photography on a full 35-mm format. The 4C camera utilizes a rotary prism for image compensation on film continuously in motion. In this camera the rotary prism operates in synchronism with a disk shutter positioned between the prism and film. This prism/shutter combination results in an even exposure over the full 35-mm format, providing high resolution and greater shutter efficiency.

PHOTOSONICS 10B, rotary prism recording camera designed to produce high-quality, high-resolution photographic images on a $2\frac{1}{4}$- by $2\frac{1}{4}$-inch format at 180 and 360 frames/sec. A half frame conversion permits frame rates of 360 and 720 frames/sec.

RAPATRONIC, single-shot, fast-action unit with an exposure time of only a few microseconds. Because of the short exposure times, photographs taken with this camera reveal the position of shock waves, and other features present in the burst activity can be electronically programmed with microsecond accuracy.

ROBOT, Model 36, basic 35-mm sequence camera has an automatic film advance operated by a spring or auxiliary electric motor after each exposure. The format is full frame 35-mm. Accessories are available that will operate the camera remotely.

SPEED GRAPHIC, standard single-shot, hand-operated, press-type camera using 4- by 5-inch cut or film pack. The camera has both focal plane and between-the-lens shutters.

YASHICA-MAT, twin-lens reflex hand-operated 120-film-size camera.

DESCRIPTION OF SPECTROGRAPHS

HUET C1 SPECTROGRAPH, static instrument designed to meet the need for spectrographic research in the visible region, 3834 Å to 5160 Å, sources of low luminosity or short duration requiring a very high aperture.

JACO 1.5 METER SPECTROGRAPH, utilizes Jaco-Wadsworth mounting of a concave grating which is stigmatic and is also a fast instrument. Wavelength range, first order, standard, 2100 Å to 7800 Å; first order, wide angle, 4200 Å to 9600 Å and 2100 Å to 4800 Å.

JARRELL ASH, MODEL 75-000, PROGRAMED SPECTROGRAPH AND MODEL 75-000 CINE SPECTROGRAPH, plane grating spectrograph with high aperture and good dispersion, resolution, and spectral coverage having a wide selection of wavelength coverages, which are determined by the choice of gratings.

MOCK INTERFEROMETER, MODEL M2, conventional Littrow spectrometer with the grating replaced by a Ronchi ruling, which increases the light transmission and produces high-contrast fringes for nearly any spectral region.

TROPEL MODEL 70 SPECTROGRAPH, high time resolution streak spectrograph with relatively fast aperture combined with medium dispersion, the spectral range 3000 Å in any continuous range between 3800 Å and 7800 Å Uses 70-mm film.

FILM NUMBER CODE

A	B	C	D	E
9	X	X	X	X

A. Number assigned to Fish Bowl which remained unchanged for all events.

B. Shot Number

Number	Event
3	Star Fish Prime
4	Check Mate
5	Blue Gill Triple Prime
6	King Fish
7	Tight Rope

C. Station Location

Station Number	Location
1	A/C 53120 (A/C 53144 Star Fish only)
2	A/C 60376
3	Johnston Island
4	Tutuila, Samoa
5	Viti Levu, Fiji
6	Tongatabu
7	Mauna Loa

D -E. Instrument Number

CONVENTIONAL ABBREVIATIONS FOR FILM TYPES

Abbreviation	Film Type
EDER	Ektachrome ER
DXN	Double X Negative
HSIR	High-Speed Infrared
KD I	Kodachrome I
KD II	Kodachrome II
MF	Microfile
PX	Plus X
RXP	Royal X Pan
TXA	Tri-X Aerecon
TX	Tri-X
XR	XR Film (Extended Range)
I-F	Spectroscopic Pan
I-N	Infrared Spectroscopic Film
130-0-UV	Ultraviolet Spectroscopic Film
IRA	Infrared Aerographic

FILTER CODE

ND	Neutral Density
COLOR	Self-explanatory
WR 12	Wratten 12 (yellow)
3914 A	Narrow band pass peaking at 3,914 Angstroms, etc.

TABLE 3.2 SUMMARY OF STAR FISH PRIME CAMERA PARAMETERS, AIRCRAFT 53120

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AIMING ANGLES IN DEGREES AZIMUTH	FILTERS ND	FILTERS COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
RAPATRONIC	W7	TXA	93103	45	-	-	WR12	490	18	*(A)	-	5MUSEC	-
KFC-600	W6	TXA	93104	45	-	3	WR12	301	9	50000	-	1MUSEC	-
CLOUD	W10	DXN	93109	45	-	-	-	105	3.7	0.5	-	0.5SEC	-
CLOUD	W13	EDER	93110	45	-	-	-	105	3.7	0.5	-	0.5SEC	-
ROBOT	W15	RXP	93111	55	-	-	3914 A	45	2.8	1	-	0.25SEC	-
ROBOT	W16	RXP	93112	55	-	-	4278 A	45	2.8	1	-	0.25SEC	-
ROBOT	W17	RXP	93113	55	-	-	4709 A	45	2.8	1	-	0.25SEC	-
ROBOT	W21	EDER	93114	86.5	-	-	-	45	2.8	1	-	0.25SEC	-
ROBOT	W22	RXP	93115	86.5	-	-	5577 A	45	2.8	1	-	0.20SEC	-
ROBOT	W23	RXP	93116	86.5	-	-	6300 A	45	2.8	1	-	0.25SEC	-
TRAID	W8	DXN	93117	45	-	-	-	25	2.3	16	160	0.023SEC	200
TRAID	W9	KDII	93118	45	-	-	-	25	2.3	16	160	0.023SEC	200
TRAID	W18	DXN	93119	55	-	-	-	25	2.3	16	160	0.023SEC	200
TRAID	W19	EDER	93120	55	-	-	-	25	2.3	16	160	0.023SEC	200
MAURER	W1	DXN	93121	19	-	-	-	80	2.8	5.5	-	0.002SEC	-
MAURER	W2	EDER	93122	19	-	-	-	38	4.5	5.5	-	0.002SEC	-
FAIRCHILD HS-100	11B	KDII	93123	45	-	-	-	13	1.5	1000	-	-	200
GSAP	W11A	KDII	93124	45	-	-	-	9.5	2.2	16	133	-	-
PHOTO-SONICS 4C	W12	DXN	93125	45	-	-	-	150	2.8	2500	30	33MUSEC	200
PHOTO-SONICS 10B	W5	DXN	93127	45	-	-	-	180	2.5	360	60	67MUSEC	200
PHOTO	PANEL	PX	93131	-	-	-	-	25	16	1	160	30MSEC	CLOCK
PHOTO	PANEL	PX	93132	-	-	-	-	25	16	0.2	160	30MSEC	CLOCK

*(A) SINGLE EXPOSURE AT 510 MUSEC.
N.B. MUSEC = MUS = MICROSECOND

TABLE 3.3 SUMMARY OF STAR FISH PRIME CAMERA PARAMETERS, AIRCRAFT 53144

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR		FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
RAPATRONIC	W7	TXA	93203	25	-	-	WR12		490	22	*(A)	-	5MUSEC	-
KFC-600	W6	TXA	93204	25	-	3.0	WR12		301	9	200000	-	0.5MUSEC	-
CLOUD	W10	DXN	93209	25	-	-	-		105	3.7	0.5	-	0.5SEC	CLOCK
CLOUD	W13	DXN	93210	25	-	-	-		105	3.7	0.5	-	0.5SEC	CLOCK
ROBOT	W15	RXP	93211	50	-	-	3914	A	45	2.8	1	-	0.25SEC	-
ROBOT	W16	RXP	93212	50	-	-	4287	A	45	2.8	1	-	0.25SEC	-
ROBOT	W17	RXP	93213	50	-	-	4709	A	45	2.8	1	-	0.25SEC	-
ROBOT	W21	EDER	93214	86.5	-	-	-		45	2.8	1	-	0.25SEC	-
ROBOT	W22	RXP	93215	86.5	-	-	5577	A	45	2.8	1	-	0.25SEC	-
ROBOT	W23	RXP	93216	86.5	-	-	6300	A	45	2.8	1	-	0.25SEC	-
TRAID	W8	DXN	93217	30	-	-	-		18.5	2.2	16	160	0.023SEC	200
TRAID	W9	KDII	93218	25	-	-	-		18.5	2.2	16	160	0.023SEC	200
TRAID	W18	DXN	93219	55	-	-	-		18.5	2.2	16	160	0.023SEC	200
MAURER	W1	DXN	93221	19	10 AFT	-	-		38	4.5	5.5	-	0.002SEC	-
MAURER	W2	DXN	93222	19	10 FWD	-	-		38	4.5	5.5	-	0.002SEC	-
FAIRCHILD HS-100	W11	KDII	93223	25	-	-	-		13	1.5	1000	-	0.2MSEC	200
GSAP	W11	KDII	93224	25	-	-	-		9.5	2.3	16	-	0.2MSEC	-
PHOTO-SONICS 4C	W12	DXN	93225	25	-	-	-		250	4	2500	30	33MUSEC	200
PHOTO-SONICS 4C	W14	DXN	93226	25	-	-	-		85	3.5	2500	30	33MUSEC	200
PHOTO-SONICS 10B	W5	DXN	93227	25	-	-	-		180	2.5	360	60	67MUSEC	200
PHOTO PANEL CAMERA	PANEL	PX	93231	-	-	-	-		25	16	1	160	30MSEC	CLOCK
PHOTO PANEL CAMERA	PANEL	PX	93232	-	-	-	-		25	16	0.2	160	30MSEC	CLOCK

*(A) SINGLE EXPOSURE AT 200 MUSEC.
N.B. MUSEC = MUS = MICROSECOND

TABLE 3.4 SUMMARY OF STAR FISH PRIME CAMERA PARAMETERS, JOHNSTON ISLAND

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
KFC-600	A1	PX	93304	85.28	199	2.0	WR12	302	9	100000 0	-	0.1MUSEC	-
PHOTO-SONICS 4C	A2	DXN	93324	85.28	199	-	-	360	5.5	2500	72	80MUSEC	200
PHOTO-SONICS 4C	A3	DXN	93323	85.28	199	-	-	500	5	2500	72	80MUSEC	200
PHOTO-SONICS 10B	A4	DXN	93325	85.28	199	-	-	500	5	360	60	67MUSEC	200
RAPATRONIC	A5	TX	93303	85.28	199	2.0	WR12	490	22	*(A)	-	5MUSEC	-
MAURER	A7	DXN	93319	85.28	199	-	-	150	2.8	5.5	-	0.002SEC	-
MAURER	A8	EDER	93320	85.28	199	-	-	80	2.8	5.5	-	0.002SEC	-
TRAID	A9	DXN	93317	85.28	199	-	-	35	2.3	16	160	0.023SEC	10
MITCHELL	A10	EDER	93327	85.28	199	-	-	35	2.3	100	170	4.7MSEC	100
FAIRCHILD HS-100	A12	KDII	93321	85.28	199	-	-	13	1.5	900	-	0.22MSEC	100
GSAP	A13	KDII	93322	85.28	199	-	-	9.5	2.2	16	133	0.024SEC	-
KC-1	A14	TXA	93332	90	199	-	-	153	6.3	0.1	-	3.4SEC	-
CLOUD	C1	EDER	93310	82	12	-	-	105	*(B)	*(C)	-	*(D)	CLOCK
CLOUD	C2	DXN	93309	60	12	-	-	105	*(B)	*(C)	-	*(D)	CLOCK
TRAID	C3	XR	93318	60	12	-	-	18.5	2.2	16	160	0.023SEC	10
BELL AND HOWELL	C4	EDER	93329	60	12	-	-	25	2	12	160	0.037SEC	10
MITCHELL LS	C5	DXN	93328	55	12	-	-	25	2.3	2.5	170	0.19SEC	10
MITCHELL HS	C6	DXN	93326	75	12	-	-	35	2.3	100	170	4.7MSEC	10
ROBOT	C7	RXP	93311	75	12	-	4278 A	45	2.8	0.33	-	1.2SEC	-
ROBOT	C8	RXP	93312	75	12	-	4709 A	45	2.8	0.33	-	1.2SEC	-
ROBOT	C9	RXP	93313	75	12	-	5228 A	45	2.8	0.33	-	1.2SEC	-
ROBOT	C10	RXP	93314	75	12	-	6300 A	45	2.8	0.33	-	1.2SEC	-
ROBOT	C11	RXP	93315	75	12	-	3914 A	45	2.8	0.33	-	1.2SEC	-
ROBOT	OUTSIDE	EDER	93334	VARIABLE		-	-	45	2.8	0.33	-	1.2SEC	-

*(A) SINGLE EXPOSURE AT 938 MUSEC.
*(B) F/22 FROM ZERO TO 120SEC, F/3.7 AFTERWARD.
*(C) 0.2 FPS FROM ZERO TO 600SEC, 0.033 FPS THEREAFTER.
*(D) 4.6SEC FROM ZERO TO 600SEC, 30 SEC THEREAFTER.
N.B. MUSEC = MUS = MICROSECOND

TABLE 4.1 SUMMARY OF CHECK MATE CAMERA PARAMETERS, AIRCRAFT 53120

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
MAURER	W1	EDER	94121	30	0	-	-	80	2.8	5	-	0.002SEC	-
MAURER	W2	XR	94122	19	0	-	-	38	4.5	5	-	0.002SEC	-
PHOTO-SONICS 10 B	W5	EDER	94127	30	0	-	-	180	2.5	360	60	0.1MSEC	200
KFC-600	W6	XR	94104	30	0	2.0	WR12	250	9.5	100000	-	1MUSEC	-
RAPATRONIC	W7	XR	94103	30	0	-	-	490	22	*(A)	-	5MUSEC	-
TRAID	W8	DXN	94117	30	0	-	-	25	2.3	16	160	30MSEC	50
TRAID	W9	EDER	94118	30	0	-	-	25	2.3	16	160	30MSEC	50
CLOUD	W10	DXN	94109	25	0	-	-	105	3.7	75	-	1SEC	CLOCK
FAIRCHILD HS-100	W11B	KDII	94123	30	0	-	-	13	1.5	1000	-	200MUSEC	50
GSAP N-6	W11B	KDII	94124	45	0	-	-	9.5	2.2	16	-	5.8MSEC	-
PHOTO-SONICS 4C	W12	DXN	94125	30	0	-	-	108	2.8	2500	72	80MUSEC	200
CLOUD	W13	EDER	94110	25	0	-	-	105	3.7	0.5	-	1SEC	CLOCK
ROBOT	W15	RXP	94111	50	0	-	3914 A	45	2.8	1	-	0.125SEC	-
ROBOT	W16	RXP	94112	50	0	-	4278 A	45	2.8	1	-	0.25SEC	-
ROBOT	W17	RXP	94113	50	0	-	4709 A	45	2.8	1	-	0.25SEC	-
TRAID	W18	EDER	94119	55	0	-	-	25	2.3	16	160	30MSEC	50
TRAID	W19	XR	94120	55	0	-	-	25	2.3	16	160	30MSEC	50
ROBOT	W21	EDER	94114	70	0	-	-	45	2.8	1	-	250MSEC	-
ROBOT	W22	RXP	94115	70	0	-	5577 A	45	2.8	1	-	250MSEC	-
ROBOT	W23	RXP	94116	70	0	-	6300 A	45	2.8	1	-	250MSEC	-
PHOTO PANEL CAMERA	PANEL	PX	94131	-	-	-	-	25	16	1	-	-	CLOCK
PHOTO PANEL CAMERA	PANEL	PX	94132	-	-	-	-	25	16	0.2	-	-	CLOCK

*(A) SINGLE EXPOSURE AT 963 MICROSECONDS.
N.B. MUSEC = MUS = MICROSECOND

TABLE 4.2 SUMMARY OF CHECK MATE CAMERA PARAMETERS, AIRCRAFT 60376

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
BEATTIE-COLEMAN	W1	EDER	94221	30	0	-	-	105	3.5	*(A)	-	*(B)	-
BEATTIE-COLEMAN	W2	DXN	94222	30	0	-	-	105	3.5	*(A)	-	*(B)	-
RAPATRONIC	W3	XR	94205	30	0	-	WR12	490	22	*(E)	-	5MUSEC	-
PHOTO-SONICS 10 B	W5	DXN	94227	30	0	-	-	180	2.5	360	60	90MUSEC	200
RAPATRONIC	W6	XR	94204	30	0	-	WR12	490	22	*(F)	-	5MUSEC	-
RAPATRONIC	W7	XR	94203	30	0	-	WR12	490	22	*(G)		5MUSEC	-
FLIGHT RESEARCH-CINE	W8	EDER	94217	30	0	-	-	35	2.3	20	130	18MSEC	10
FLIGHT RESEARCH-CINE	W9	XR	94218	30	0	-	-	35	2.5	20	130	18MSEC	10
RAPATRONIC	W10	XR	94223	30	0	-	WR12	482	22	*(H)	-	5MUSEC	-
BEATTIE-COLEMAN	W11	EDER	94209	30	AFT 10	-	-	105	3.5	*(C)	-	*(D)	-
PHOTO-SONICS 4C	W12	XR	94226	30	0	-	-	108	2.8	2500	72	80MUSEC	200
BEATTIE-COLEMAN	W13	XR	94210	30	FWD 10	-	-	105	3.5	*(C)	-	*(D)	-
PHOTO-SONICS 4C	W14	DXN	94225	30	0	-	-	150	2.8	2500	72	80MUSEC	200
FLIGHT RESEARCH-CINE	W15	EDER	94219	50	0	-	-	35	2.3	20	130	18MSEC	10
FLIGHT RESEARCH-CINE	W16	DXN	94220	50	0	-	-	35	2.3	20	130	18MSEC	10
FLIGHT RESEARCH-PULSED	W17	RXP	94211	50	0	-	3914 A	35	2.3	1	130	0.36SEC	-
FLIGHT RESEARCH-PULSED	W18	RXP	94212	50	0	-	4278 A	35	2.3	1	130	0.36SEC	-
FLIGHT RESEARCH-PULSED	W19	RXP	94213	50	0	-	4709 A	35	2.3	1	130	0.36SEC	-
FLIGHT RESEARCH-PULSED	W20	RXP	94214	50	0	-	5577 A	35	2.3	1	130	0.36SEC	-
FLIGHT RESEARCH-PULSED	W21	RXP	94215	50	0	-	6300 A	35	2.3	1	130	0.36SEC	-
PHOTO PANEL CAMERA	PANEL	PX	94231	-	-	1.0	-	25	5.6	1	160	30MSEC	CLOCK
PHOTO PANEL CAMERA	PANEL	PX	94232	-	-	1.0	-	25	5.6	0.2	160	30MSEC	CLOCK

*(A) 1 FR/SEC, 0.5 FR/SEC, 0.2 FR/SEC, 0.1 FR/SEC UP TO + 10 SEC, +60 SEC, +180SEC, 1800 SEC, RESPECTIVELY.
*(B) 0.5 SEC, 1.5 SEC, 4.5 SEC, 9.5 SEC, UP TO +10 SEC, +60 SEC, +180 SEC, +1800 SEC, RESPECTIVELY.
*(C) SINGLE EXPOSURE AT 14 MUSEC.
*(D) SINGLE EXPOSURE AT 52.4 MUSEC.
*(E) SINGLE EXPOSURE AT 103.4 MUSEC.
*(F) SINGLE EXPOSURE AT 256.2 MUSEC.
*(G) 1 FR/SEC, 0.2 FR/SEC, 0.1 FR/SEC UP TO +10 SEC, +180 SEC, +1800 SEC, RESPECTIVELY.
*(H) 0.5 SEC, 4.5 SEC, 9.5 SEC, UP TO +10 SEC, +10 SEC, +180 SEC, +1800 SEC, RESPECTIVELY.
*(I) 1 FR/SEC UP TO +10 SEC, 0.33 FR/SEC UP TO +30 SEC, THEN 0.1 FR/SEC TO END.
N.B. MUSEC = MUS = MICROSECOND

TABLE 4.3 SUMMARY OF CHECK MATE CAMERA PARAMETERS, JOHNSTON ISLAND

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR		FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
KFC-600	A1	XR	94304	64.28	191.75	2.0	WR12		254	9.5		-	0.1MUSEC	-
PHOTO-SONICS 4C	A2	EDER	94324	64.28	191.75	-	-		108	2.8	2500	72	80MUSEC	200
PHOTO-SONICS 4C	A3	DXN	94323	64.28	191.75	-	-		250	4.0	2500	72	80MUSEC	200
PHOTO-SONICS 10B	A4	DXN	94325	64.28	191.75	-	-		250	4.0	360	60	0.46MSEC	50
RAPATRONIC	A5	XR	94303	64.28	191.75	-	-		490	22	*(A)	-	5MUSEC	-
MAURER	A7	XR	94319	65.13	192	-	-		150	2.8	5.5	-	0.05SEC	-
MAURER	A8	EDER	94320	65.13	192	-	-		150	2.8	5.5	-	0.05SEC	-
TRAID	A9	DXN	94317	65.13	192	-	-		95	2.3	16	160	0.028SEC	10
MITCHELL	A10	DXN	94326	65.13	192	-	-		35	2.3	100	170	4.7MSEC	100
FAIRCHILD HS-100	A12	KDI	94321	65.13	192	-	-		13	1.5	900	-	0.22MSEC	100
GSAP	A13	KDII	94322	65.13	192	-	-		9.5	2.2	16	133	0.023SEC	-
KC-1B	A14	TXA	94332	79	192	-	-		153	6.3	0.2	-	5SEC	-
CLOUD	C1	EDER	94309	65.13	192	-	-		105	3.7	*(B)	-	*(C)	-
CLOUD	C2	EDER	94310	40	12	-	-		105	3.7	*(B)	-	*(C)	-
TRAID	C3	XR	94318	65.13	192	-	-		25	2.3	16	160	0.028SEC	10
MITCHELL	C4	EDER	94327	65.13	192	-	-		35	2.3	100	170	4.7MSEC	100
BELL AND HOWELL	C5	XR	94329	39.83	192	-	-		25	2.0	12	170	0.039SEC	10
MITCHELL LS	C6	EDER	94328	65.13	192	-	-		18.5	2.3	2.5	170	0.19SEC	10
ROBOT	C7	RXP	94311	65	192	-	4278	A	45	2.8	*(B)	-	*(C)	-
ROBOT	C8	RXP	94312	65	192	-	4709	A	45	2.8	*(B)	-	*(C)	-
ROBOT	C9	RXP	94313	65	192	-	5228	A	45	2.8	*(B)	-	*(C)	-
ROBOT	C11	RXP	94314	65	192	-	6300	A	45	2.8	*(B)	-	*(C)	-
ROBOT	C12	RXP	94315	65	192	-	3914	A	45	2.8	*(B)	-	*(C)	-
DYNAFAX	D1	IRA	94335	65.13	192	-	-		915	9.0	25000	-	5MUSEC	-
DYNAFAX	D2	IRA	94336	65.13	192	-	-		76	2.8	25000	-	5MUSEC	-
ROBOT	OUTSIDE	EDER	94334	TRAINABLE		-	-		45	2.8	*(B)	-	*(C)	-

*(A) SINGLE EXPOSURE AT 963 MICROSECONDS.
*(B) 0.2 FR/SEC FROM -30 SEC TO +120 SEC, THEN 0.033 FR/SEC TO END.
*(C) 5-SEC EXPOSURE FROM -30 SEC TO +120 SEC, THEN 30-SEC EXPOSURE TO END.
N.B. MUSEC = MUS = MICROSECOND

TABLE 5.2 SUMMARY OF BLUE GILL TRIPLE PRIME CAMERA PARAMETERS, AIRCRAFT 53120

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
MAURER	W1	EDER	95121	30	0	-	-	80	2.8	5.5	-	1MUSEC	-
MAURER	W2	XR	95122	27	0	-	-	38	4.5	5.5	-	1MUSEC	-
PHOTO-SONICS 10 B	W5	EDER	95127	30	0	1.0	-	180	16	360	1	10MUSEC	200
KFC-600	W6	XR	95104	30	0	2.0	WR12	305	9.5	100000	-	1MUSEC	-
RAPATRONIC	W7	XR	95103	30	0	1.0	WR12	490	22	*(A)	-	5MUSEC	-
TRAID	W8	PX	95117	45	0	1.0	-	25	16	48	7	0.4MSEC	50
TRAID	W9	KDII	95118	45	0	-	-	25	11	48	7	0.4MSEC	50
CLOUD	W10	DXN	95109	45	0	-	-	105	3.7	0.5	-	1SEC	CLOCK
FAIRCHILD HS-100	W11	KDI	95123	30	0	1.0	-	13	16	1000	∞	0.2MSEC	50
GSAP N-6	W11	KDII	95124	45	0	-	-	9.5	16	64	133	6MSEC	-
PHOTO-SONICS 4C	W12	XR	95125	30	0	-	-	108	5.6	2500	9	10MUSEC	200
CLOUD	W13	EDER	95110	45	0	-	-	105	3.7	0.2	-	1SEC	CLOCK
ROBOT	W15	RXP	95111	50	0	-	3914A	45	2.8	1	-	250MSEC	-
ROBOT	W16	RXP	95112	50	0	-	4278A	45	2.8	1	-	250MSEC	-
ROBOT	W17	RXP	95113	50	0	-	4709A	45	2.8	1	-	250MSEC	-
TRAID	W18	EDER	95119	55	0	-	-	25	2.3	16	160	30MSEC	50
TRAID	W19	XR	95120	55	0	-	-	25	2.3	16	160	30MSEC	50
ROBOT	W21	EDER	95114	75	0	-	-	45	2.8	1	-	250MSEC	-
ROBOT	W22	RXP	95115	75	0	-	5577A	45	2.8	1	-	250MSEC	-
ROBOT	W23	RXP	95116	75	0	-	6300A	45	2.8	1	-	250MSEC	-
PHOTO PANEL CAMERA	PANEL	PX	95131	-	-	-	-	25	16	1	160	30MSEC	CLOCK
PHOTO PANEL CAMERA	PANEL	PX	95132	-	-	-	-	25	16	0.2	160	30MSEC	CLOCK

*(A) SINGLE EXPOSURE AT 510 MUSEC.
N.B. MUSEC = MUS = MICROSECOND

TABLE 5.3 SUMMARY OF BLUE GILL TRIPLE PRIME CAMERA PARAMETERS, AIRCRAFT 60376

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
BEATTIE-COLEMAN	W1	EDER	95221	30	0	-	-	105	8	*(A)	-	*(B)	-
BEATTIE-COLEMAN	W2	PX	95222	30	0	-	-	105	8	*(A)	-	*(B)	-
RAPATRONIC	W3	XR	95205	30	0	1.0	WR12	490	22	*(C)	-	5MUSEC	-
PHOTO-SONICS 10 B	W5	PX	95227	30	0	-	-	180	22	360	1	10MUSEC	200
RAPATRONIC	W6	XR	95204	30	0	1.0	WR12	490	22	*(D)	-	5MUSEC	-
RAPATRONIC	W7	XR	95203	30	0	1.0	WR12	490	22	*(E)	-	5MUSEC	-
FLIGHT RESEARCH-CINE	W8	KDII	95217	30	0	-	-	35	7	20	130	20MSEC	10
FLIGHT RESEARCH-CINE	W9	XR	95218	30	0	-	-	35	2.5	20	130	20MSEC	10
RAPATRONIC	W10	XR	95223	30	0	1.0	WR12	490	22	*(F)	-	5MUSEC	-
BEATTIE-COLEMAN	W11	EDER	95209	45	AFT 10	-	-	105	3.5	*(G)	-	*(H)	-
PHOTO-SONICS 4C	W12	PX	95225	30	0	2.0	-	108	11	2500	9	10MUSEC	200
BEATTIE-COLEMAN	W13	XR	95210	45	AFT 10	-	-	105	3.5	*(G)	-	*(H)	-
PHOTO-SONICS 4C	W14	EDER	95226	30	0	2.0	-	50	11	2500	9	10MUSEC	200
FLIGHT RESEARCH-CINE	W15	EDER	95219	50	0	-	-	35	2.3	20	130	20MSEC	10
FLIGHT RESEARCH-CINE	W16	PXR	95220	50	0	-	-	35	2.3	20	130	20MSEC	10
FLIGHT RESEARCH-PULSED	W17	RXP	95211	50	0	-	3914A	35	2.3	*(I)	130	1SEC	-
FLIGHT RESEARCH-PULSED	W18	RXP	95212	50	0	-	4278A	35	2.3	*(I)	130	1SEC	-
FLIGHT RESEARCH-PULSED	W19	RXP	95213	50	0	-	4709A	35	2.3	*(I)	130	1SEC	-
FLIGHT RESEARCH-PULSED	W20	RXP	95214	75	0	-	5577A	35	2.3	*(I)	130	1SEC	-
FLIGHT RESEARCH-PULSED	W21	RXP	95215	75	0	-	6300A	35	2.3	*(I)	130	1SEC	-
PHOTO PANEL CAMERA	PANEL	PX	95231	-	-	1.0	-	25	5.6	1	160	30MSEC	CLOCK
PHOTO PANEL CAMERA	PANEL	PX	95232	-	-	1.0	-	25	5.6	0.2	160	30MSEC	CLOCK

N.B. MUSEC = MUS = MICROSECOND

* (A) 1 FR/SEC, 0.5 FR/SEC, 0.2 FR/SEC, 0.1 FR/SEC UP TO + 10 SEC, + 60 SEC, +180 SEC, 1,800 SEC, RESPECTIVELY.
* (B) 0.5 SEC, 1.5 SEC, 4.5 SEC, 9.5 SEC, UP TO +10 SEC, +60 SEC, +180 SEC, +1,800 SEC, RESPECTIVELY.
* (C) SINGLE EXPOSURE AT 14 MUSEC.
* (D) SINGLE EXPOSURE AT 52.4 MUSEC.
* (E) SINGLE EXPOSURE AT 103.4 MUSEC.
* (F) SINGLE EXPOSURE AT 256.2 MUSEC.
* (G) 1 FR/SEC, 0.2 FR/SEC, 0.1 FR/SEC UP TO +10 SEC, +180 SEC, +1,800 SEC, RESPECTIVELY.
* (H) 0.5 SEC, 4.5 SEC, 9.5 SEC, UP TO +10 SEC, +10 SEC, +180 SEC, +1,800 SEC, RESPECTIVELY.
* (I) 1 FR/SEC UP TO +10 SEC, 0.33 FR/SEC UP TO +30 SEC, THEN 0.1 FR/SEC TO END.

TABLE 5.4 SUMMARY OF BLUE GILL TRIPLE PRIME CAMERA PARAMETERS, JOHNSTON ISLAND

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
KFC-600	A1	XR	95304	54	192	ND2	WR12	254	9	100000	0 -	0.1MUSEC	-
PHOTO-SONICS 4C	A2	EDER	95324	54	192	ND2	-	108	22	2500	9	10MUSEC	200
PHOTO-SONICS 4C	A3	PX	95323	54	192	ND3	-	150	22	2500	9	10MUSEC	200
PHOTO-SONICS 10B	A4	PX	95325	54	192	ND2	-	250	22	360	1	10MUSEC	50
RAPATRONIC	A5	XR	95303	54	192	-	WR12	490	22	*(A)	-	5MUSEC	-
MAURER	A7	XR	95319	54	192	-	-	150	6.3	5.5	-	0.5MSEC	-
MAURER	A8	EDER	95320	54	192	-	-	150	32	5.5	-	0.5MSEC	-
TRAID	A9	PX	95317	54	192	ND1	-	35	16	48	7	0.93MSEC	10
MITCHELL	A10	PX	95326	57	192	ND2	-	35	16	100	15	0.24MSEC	100
FAIRCHILD HS-100	A12	KD1	95321	54	192	ND2	-	13	16	900	-	0.22MSEC	100
GSAP	A13	KDII	95322	65	192	-	-	9.5	2.2	16	133	37MSEC	-
KC-1B	A14	TXA	95332	79	192	-	-	153	6.3	0.2	-	5SEC	-
CLOUD	C1	EDER	95309	70	192	-	-	105	3.7	0.25	-	0.5SEC	-
CLOUD	C2	EDER	95310	85	192	-	-	105	3.7	0.25	-	1SEC	-
TRAID	C3	XR	95318	70	192	ND3	-	25	2.3	16	160	14MSEC	-
MITCHELL	C4	KDII	95327	57	192	ND1	-	35	16	100	15	0.24MSEC	100
BELL AND HOWELL	C5	XR	95329	70	192	-	-	25	2.0	12	160	18.5MSEC	10
MITCHELL LS	C6	EDER	95328	70	192	-	-	18.5	2.2	2.5	170	180MSEC	10
ROBOT	C7	RXP	95311	65	192	-	4278A	45	2.8	0.33	-	1.2SEC	-
ROBOT	C8	RXP	95312	65	192	-	4709A	45	2.8	0.33	-	1.2SEC	-
ROBOT	C9	RXP	95313	65	192	-	5228A	45	2.8	0.33	-	1.2SEC	-
ROBOT	C11	RXP	95314	78	192	-	6300A	45	2.8	0.33	-	1.2SEC	-
ROBOT	C12	RXP	95315	65	192	-	3914A	45	2.8	0.33	-	1.2SEC	-
ROBOT	OUTSIDE	EDER	95334	VAR.	VAR.	-	-	45	2.8	0.33	-	VAR.	-
DYNAFAX	D1	MF	95335	54	192	-	-	813	9	25000	-	5MUSEC	-
DYNAFAX	D2	HSIR	95336	54	192	-	-	76	2.8	25000	-	5MUSEC	-

*(A) SINGLE EXPOSURE AT 900 MUSEC.
N.B. MUSEC = MUS = MICROSECOND

TABLE 6.2 SUMMARY OF KING FISH CAMERA PARAMETERS, AIRCRAFT 53120

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
MAURER	W1	DXN	96122	30	0	-	-	80	11	5.5	-	0.5MSEC	-
MAURER	W2	EDER	96121	27	0	-	-	38	11	5.5	-	1.0MSEC	-
PHOTO-SONICS 10B	W5	PX	96127	30	0	-	-	180	5.6	360	1	7.7MUS	200
KFC-600	W6	XR	96104	30	0	-	WR12	301	9.5	50009	-	1 MUS	-
RAPATRONIC	W7	XR	96103	30	0	-	-	490	22.	0*(A)	-	5MUSEC	-
TRAID	W8	PX	63117	45	0	-	-	25	8.0	48	7	0.4MSEC	50
TRAID	W9	KDII	96118	45	0	-	-	25	3.5	48	7	0.4MSEC	50
CLOUD	W10	DXN	96109	45	0	-	-	105	3.7	0.2	-	0.2 SEC	CLOCK
FAIRCHILD HS-100	W11B	KD I	96123	30	0	1.0	-	13	11.	01000	-	0.2MSEC	50
GSAP N-6	W11A	KDII	96124	45	0	-	-	9.5	11.	064	133	5.8MSEC	-
PHOTO-SONICS 4C	W12	XR	96125	30	0	-	-	80	5.6	2500	9	10MUS	200
CLOUD	W13	EDER	96110	45	0	-	-	105	3.7	0.5	-	0.04 SEC	CLOCK
ROBOT	W15	RXP	96111	50	0	-	5577 A	45	2.8	*(B)	-	250MSEC	-
ROBOT	W16	EDER	96112	50	0	-	-	45	2.8	*(B)	-	250MSEC	-
ROBOT	W17	RXP	96116	50	0	-	6300 A	45	2.8	*(B)	-	250MSEC	-
TRAID	W18	EDER	96119	55	0	-	-	25	2.3	16	160	28MSEC	10
TRAID	W19	XR	96120	55	0	-	-	25	8	16	160	28MSEC	10
ROBOT	W21	EDER	96114	75	0	-	-	45	2.8	*(B)	-	200MSEC	10
ROBOT	W22	RXP	96115	75	0	-	-	45	2.8	*(B)	-	250MSEC	-
ROBOT	W23	RXP	96116	75	0	-	-	45	2.8	*(B)	-	250MSEC	-
PHOTO PANEL CAMERA	PANEL	PX	96131	-	-	-	-	25	16	1	160	30MSEC	CLOCK
PHOTO PANEL CAMERA	PANEL	PX	96132	-	-	-	-	25	16	0.2	160	30MSEC	CLOCK

*(A) SINGLE EXPOSURE AT 510 MICROSECONDS.
*(B) 1 FR/SEC UNTIL +60 SEC, THEN 0.5 FR/SEC TO END.
N.B. MUSEC = MUS = MICROSECOND

TABLE 6.3 SUMMARY OF KING FISH CAMERA PARAMETERS, AIRCRAFT 60376

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AIMING ANGLES IN DEGREES AZIMUTH	FILTERS ND	FILTERS COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
BEATTIE-COLEMAN	W1	EDER	96221	30	0	-	-	105	3.5	*(A)	-	*(B)	-
BEATTIE-COLEMAN	W2	PX	96222	30	0	-	-	10	3.5	*(A)	-	*(B)	-
RAPATRONIC	W3	XR	96205	30	0	1.0	WR12	490	22	*(F)	-	5MUSEC	-
PHOTO-SONICS 10B	W5	EDER	96227	30	0	-	-	135	16	360	1	0.01MSEC	200
RAPATRONIC	W6	XR	96204	30	0	1.0	WR12	490	22	*(G)	-	5MUSEC	-
RAPATRONIC	W7	XR	96203	30	0	1.0	WR12	490	22	*(H)	-	5MUSEC	-
FLIGHT RESEARCH-CINE	W8	EDER	96219	30	0	-	-	35	22	20	130	20MSEC	10
FLIGHT RESEARCH-CINE	W9	XR	96218	30	0	-	-	35	8	20	130	20MSEC	10
RAPATRONIC	W10	XR	96223	30	0	-	WR12	490	22	*(I)	-	5MUSEC	-
BEATTIE-COLEMAN	W11	EDER	96209	45	AFT 10	1.0	-	105	16	*(C)	-	*(D)	-
PHOTO-SONICS 4C	W12	PX	96225	30	0	1.0	-	108	16	2500	9	10MUSEC	200
BEATTIE-COLEMAN	W13	DXN	96210	45	AFT 10	-	-	105	3.5	*(C)	-	*(D)	-
PHOTO-SONICS 4C	W14	EDER	96229	30	0	-	-	58	9	2500	9	10MUSEC	200
FLIGHT RESEARCH-CINE	W15	KDII	96217	50	0	-	-	35	2.8	20	130	20MSEC	200
FLIGHT RESEARCH-CINE	W16	PX	96220	50	0	3.0	-	35	22	20	130	20MSEC	10
FLIGHT RESEARCH-PULSED	W17	EDER	96211	50	0	-	-	35	2.3	*(E)	130	1 SEC	-
FLIGHT RESEARCH-PULSED	W18	RXP	96212	50	0	-	-	35	2.3	*(E)	130	1 SEC	-
FLIGHT RESEARCH-PULSED	W19	EDER	96213	75	0	-	-	35	2.3	*(E)	130	1 SEC	-
FLIGHT RESEARCH-PULSED	W20	RXP	96214	75	0	-	5577 A	35	2.3	*(E)	130	1 SEC	-
FLIGHT RESEARCH-PULSED	W21	RXP	96215	75	0	-	6300 A	35	2.3	*(E)	130	1 SEC	-
PHOTO PANEL CAMERA	PANEL	PX	96231	-	-	10.	-	25	5.6	1	160	30MSEC	CLOCK
PHOTO PANEL CAMERA	PANEL	PX	96232	-	-	1.0	-	25	5.6	0.2	160	30MSEC	CLOCK

*(A) 1 FR/SEC, 0.5 FR/SEC, 0.2 FR/SEC, 0.1 FR/SEC UP TO + 10 SEC, +60 SEC, +180SEC 1800 SEC, RESPECTIVELY.
*(B) 0.5 SEC, 1.5 SEC, 4.5 SEC, 9.5 SEC, UP TO +10 SEC, +60 SEC, +180 SEC, +1800 SEC, RESPECTIVELY.
*(C) 1 FR/SEC, 0.2 FR/SEC, 0.1 FR/SEC UP TO +10 SEC, +180 SEC, +1800 SEC, RESPECTIVELY.
*(D) 0.5 SEC, 4.5 SEC, 9.5 SEC, UP TO +10 SEC, +10 SEC, +180 SEC, +1800 SEC, RESPECTIVELY.
*(E) 1 FR/SEC UP TO +10 SEC, 0.33 FR/SEC UP TO +30 SEC, THEN 0.1 FR/SEC TO END.
*(F) SINGLE EXPOSURE AT 14 MUSEC.
*(G) SINGLE EXPOSURE AT 52.4 MUSEC.
*(H) SINGLE EXPOSURE AT 103.4 MUSEC.
*(I) SINGLE EXPOSURE AT 256.2 MUSEC.
N.B. MUSEC = MUS = MICROSECOND

TABLE 6.4 SUMMARY OF KING FISH CAMERA PARAMETERS, JOHNSTON ISLAND

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AIMING ANGLES IN DEGREES AZIMUTH	FILTERS ND	FILTERS COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
KFC-600	A1	XR	96304	53	191.95	-	WR12	301	9	106	-	0.1MUSEC	-
PHOTO-SONICS 4C	A2	EDER	96324	53	191.95	1.0	-	80	16	2500	9	10MUSEC	200
PHOTO-SONICS 4C	A3	PX	96323	53	191.95	-	-	108	16	2500	9	10MUSEC	200
PHOTO-SONICS 10B	A4	PX	96325	53	191.95	-	-	180	16	360	1	7.7MUSEC	50
RAPATRONIC	A5	XR	96303	53	191.95	-	WR12	490	20	*(A)	-	5MUSEC	-
MAURER	A7	XR	96319	53	192	-	-	150	4	5.5	-	0.5MSEC	-
MAURER	A8	EDER	96320	53	192	-	-	150	22	5.5	-	0.5MSEC	-
TRAID	A9	PX	96317	55	192	-	-	35	11	48	7	0.4MSEC	10
MITCHELL	A10	PX	96326	55	192	1.0	-	35	11	100	15	0.4MSEC	50
FAIRCHILD HS-100	A12	KD I	96321	53	192	-	-	13	16	650	-	0.3MSEC	50
GSAP	A13	EDER	96322	53	192	-	-	9.5	16	16	133	23MSEC	-
KC-1B	A14	TXA	96332	79	192	-	-	152	6.3	*(B)	-	*(C)	-
CLOUD	C1	EDER	96309	70	192	-	-	105	3.7	*(B)	-	*(C)	CLOCK
CLOUD	C2	EDER	96310	58	192	-	-	105	3.7	*(B)	-	*(C)	CLOCK
TRAID	C3	XR	96318	63	192	1.0	-	25	16	16	160	0.028SEC	10
MITCHELL	C4	KDII	96327	53	192	ND1	-	35	16	100	15	4.0MSEC	50
BELL AND HOWELL	C5	XR	96329	58	192	-	-	25	2.0	12	160	0.037SEC	10
MITCHELL LS	C6	EDER	96328	63	192	-	-	18.5	*(D)	2.5	170	0.2SEC	10
ROBOT	C7	RXP	96311	63	192	-	4278 A	45	2.8	*(B)	-	*(C)	-
ROBOT	C8	EDER	96312	78	192	-	-	45	2.8	*(B)	-	*(C)	-
ROBOT	C9	EDER	96313	63	192	-	-	45	2.8	*(B)	-	*(C)	-
ROBOT	C11	RXP	96314	63	192	-	6300 A	45	2.8	*(B)	-	*(C)	-
ROBOT	C12	RXP	96315	63	192	-	3914 A	45	2.8	*(B)	-	*(C)	-
DYNAFAX	D1	MF	96335	53	191.95	-	-	813	9.0	25000	-	5MUSEC	2000
DYNAFAX	D2	HSIR	96336	53	191.95	1.0	-	76	2.8	25000	-	5MUSEC	2000
ROBOT	OUTSIDE	EDER											

*(A) SINGLE EXPOSURE AT 963 MICROSECONDS.
*(B) 0.33 FR/SEC FROM -30 SEC TO +120 SEC, THEN 0.033 FR/SEC TO END.
*(C) 1-SEC EXPOSURE FROM -30 SEC TO +120 SEC, THEN 30-SEC EXPOSURE TO END.
*(D) F/16 FROM -30 SEC TO +60 SEC, THEN F/2.2 TO END.
N.B. MUSEC = MUS = MICROSECOND

TABLE 7.1 SUMMARY OF TIGHT ROPE CAMERA PARAMETERS, AIRCRAFT 53120

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
MAURER	W1	DXN	97122	30	0	-	-	38	5.6	5.5	-	0.5MSEC	-
MAURER	W2	EDER	97121	27	0	-	-	38	8	5.5	-	1MSEC	-
PHOTO-SONICS 10 B	W5	EDER	97127	25	0	2.0	-	135	22	360	1	7.7MUS	200
KFC-600	W6	XR	97104	25	0	-	WR12	301	9.5	50000	-	1MUOEC	-
RAPATRONIC	W7	XR	97103	25	0	-	-	482	22	*(A)	-	5MUSEC	-
TRAID	W8	PX	97117	30	0	1.0	-	25	8	48	7	0.4MSEC	50
TRAID	W9	EDER	97118	30	0	1.0	-	25	16	48	7	0.4MSEC	50
CLOUD	W10	DXN	97109	45	0	-	-	105	3.7	0.2	-	0.5SEC	CLOCK
FAIRCHILD HS-100	W11B	KDI	97123	25	0	2.0	-	13	16	1000	-	0.2MSEC	50
GSAP N6	W11A	KDII	97124	25	0	1.0	-	9.5	22	64	133	5.8MSEC	-
PHOTO-SONICS 4C	W12	XR	97125	25	0	-	-	80	11	2500	9	10MUSEC	200
CLOUD	W13	EDER	97110	45	0	-	-	105	3.7	0.2	-	0.5SEC	CLOCK
ROBOT	W15	RXP	97111	50	0	-	3914A	45	2.8	*(B)	-	250MSEC	-
ROBOT	W16	RXP	97112	50	0	-	4278A	45	2.8	*(B)	-	250MSEC	-
ROBOT	W17	RXP	97113	50	0	-	4709A	45	2.8	*(B)	-	250MSEC	-
TRAID	W18	EDER	97119	55	0	-	-	25	2.3	16	160	28MSEC	10
TRAID	W19	XR	97120	55	0	-	-	25	8	16	160	28MSEC	10
ROBOT	W21	EDER	97114	70	0	-	-	45	2.8	*(B)	-	250MSEC	-
ROBOT	W22	RXP	97115	70	0	-	5577A	45	2.8	*(B)	-	250MSEC	-
ROBOT	W23	RXP	97116	70	0	-	6300A	45	2.8	*(B)	-	125MSEC	-
PHOTO PANEL CAMERA	PANEL	PX	97131	-	-	-	-	25	16	1	160	30MSEC	CLOCK
PHOTO PANEL CAMERA	PANEL	PX	97132	-	-	-	-	25	16	0.2	160	30MSEC	CLOCK

* (A) SINGLE EXPOSURE AT 510 MUSEC.
* (B) 1 FR/SEC FOR ABOUT 1 MIN, THEN 1/2 FR/SEC TO END.
N.B. MUSEC = MUS = MICROSECOND

TABLE 7.2 SUMMARY OF TIGHT ROPE CAMERA PARAMETERS, AIRCRAFT 60376

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
BEATTIE-COLEMAN	W1	EDER	97221	30	0	-	-	105	11	*(A)	-	*(B)	-
BEATTIE-COLEMAN	W2	DXN	97222	30	0	-	-	105	5.6	*(A)	-	*(B)	-
RAPATRONIC	W3	XR	97205	25	0	1.0	WR12	490	22	*(F)	-	5MUSEC	-
PHOTO-SONICS 10 B	W5	PX	97227	25	0	1.0	-	180	22	360	1	7.7MUS	200
RAPATRONIC	W6	XR	97204	25	0	1.0	WR12	490	22	*(G)	-	5MUSEC	-
RAPATRONIC	W7	XR	97203	25	0	1.0	WR12	490	22	*(H)	-	5MUSEC *(H)	-
FLIGHT RESEARCH-CINE	W8	EDER	97217	30	0	-	-	35	22	20	130	18MSEC	10
FLIGHT RESEARCH-CINE	W9	XR	97218	30	0	-	-	35	5.6	20	130	18MSEC	10
RAPATRONIC	W10	XR	97223	25	0	1.0	WR12	490	22	*(J)	-	5MUSEC	-
BEATTIE-COLEMAN	W11	EDER	97209	45	0	-	-	105	5.6	*(C)	-	*(D)	-
PHOTO-SONICS 4C	W12	EDER	97226	25	0	2.0	-	108	16	2500	9	10MUSEC	200
BEATTIE-COLEMAN	W13	DXN	97210	45	0	-	-	105	3.5	*(C)	-	*(D)	-
PHOTO-SONICS 4C	W14	PX	97225	25	0	2.0	-	108	16	2500	9	10MUSEC	200
FLIGHT RESEARCH-CINE	W15	PX	97219	50	0	-	-	35	22	20	130	18MSEC	10
FLIGHT RESEARCH-CINE	W16	EDER	97220	50	0	-	-	35	11	20	130	18MSEC	10
FLIGHT RESEARCH-PULSED	W17	PX	97211	50	0	-	3914A	35	2.3	*(E)	130	1SEC	-
FLIGHT RESEARCH-PULSED	W18	RXP	97212	50	0	-	4278A	35	2.3	*(E)	130	1SEC	-
FLIGHT RESEARCH-PULSED	W19	RXP	97213	50	0	-	4709A	35	2.3	*(E)	130	1SEC	-
FLIGHT RESEARCH-PULSED	W20	RXP	97214	50	0	-	5577A	35	2.3	*(E)	130	1SEC	-
FLIGHT RESEARCH-PULSED	W21	RXP	97215	50	0	-	6300A	35	2.3	*(E)	130	1SEC	-
PHOTO PANEL CAMERA	PANEL	PX	97231	-	-	1.0	-	25	5.6	1	160	30MSEC	CLOCK
PHOTO PANEL CAMERA	PANEL	PX	97232	-	-	1.0	-	25	5.6	0.2	160	30MSEC	CLOCK

* (A) 1 FR/SEC, 0.5 FR/SEC, 0.2 FR/SEC, 0.1 FR/SEC, UP TO +10 SEC, +60 SEC, 180 SEC, +1800 SEC, RESPECTIVELY.
* (B) 0.5 SEC, 1.5 SEC, 4.5 SEC, 9.5 SEC, UP TO +10 SEC, +60 SEC, +180 SEC, 1800 SEC, RESPECTIVELY.
* (C) 1 FR/SEC 0.2 FR/SEC UP TO +10 SEC, +180 SEC, +1800 SEC, RESPECTIVELY.

* (D) 0.5 SEC, 4.5 SEC, 9.5 SEC UP TO +10 SEC, +180 SEC, +1800 SEC, RESPECTIVELY.
* (E) 1 FR/SEC UP TO 60 SEC, THEN 1/3 FR/SEC TO END.
* (F) SINGLE EXPOSURE AT 14 MUSEC.
* (G) SINGLE EXPOSURE AT 52.4 MUSEC.
* (H) SINGLE EXPOSURE AT 103.4 MUSEC.
* (J) SINGLE EXPOSURE AT 256.2 MUSEC.

N.B. MUSEC = MUS = MICROSECOND

TABLE 7.3 SUMMARY OF TIGHT ROPE CAMERA PARAMETERS, JOHNSTON ISLAND

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
KFC-600	A1	XR	97304		BURST	-	WR12	301	9	100000 0	-	0.1MUSEC	-
PHOTO-SONICS 4C	A2	EDER	97324		BURST	ND2	-	250	32	2500	9	10MUSEC	200
PHOTO-SONICS 4C	A3	XR	97323		BURST	ND1	-	360	22	2500	9	10MUSEC	200
PHOTO-SONICS 10B	A4	PX	97325		BURST	ND2	-	500	16	360	1	7.7MUS	50
RAPATRONIC	A5	XR	97303		BURST	-	WR12	482	20	*(A)	-	5MUSEC	-
MAURER	A7	DXN	97319		BURST	ND2	-	150	11	5.5	-	0.5MSEC	-
MAURER	A8	EDER	97320		BURST	*(E)	-	150	8	5.5	-	0.5MSEC	-
TRAID	A9	PX	97317		BURST	-	-	35	8	48	7	0.4MSEC	10
MITCHELL	A10	PX	97326		BURST	*(D)	-	105	*(D)	100	15	0.4MSEC	50
FAIRCHILD HS-100	A12	KDI	97321		BURST	ND3	-	13	16	650	-	.3MSEC	50
GSAP	A13	KDII	97322		BURST	-	-	9.5	2.2	16	133	23MSEC	-
KC-1B	A14	TXA	97332		BURST	-	-	152	6.3	*(B)	-	*(C)	-
CLOUD	C1	EDER	97309		BURST	-	-	105	3.7	*(B)	-	*(C)	CLOCK
CLOUD	C2	DXN	97310		BURST	-	-	105	3.7	*(B)	-	*(C)	CLOCK
TRAID	C3	XR	97318		BURST	-	-	35	2.3	16	160	0.028SEC	10
MITCHELL	C4	KDII	97327		BURST	*(D)	-	150	*(D)	100	15	0.4MSEC	50
BELL AND HOWELL	C5	EDER	97329		BURST	-	-	35	8	12	160	0.037SEC	10
MITCHELL LS	C6	EDER	97328		BURST	-	-	18.5	2.2	2.5	170	0.2SEC	10
ROBOT	C7	RXP	97311		BURST	-	4278 A	45	2.8	*(B)	-	*(C)	-
ROBOT	C8	RXP	97312		BURST	-	4709 A	45	2.8	*(B)	-	*(C)	-
ROBOT	C9	RXP	97313		BURST	-	5228 A	45	2.8	*(B)	-	*(C)	-
ROBOT	C11	RXP	97314		BURST	-	6300 A	45	2.8	*(B)	-	*(C)	-
ROBOT	C12	RXP	97315		BURST	-	3914 A	45	2.8	*(B)	-	*(C)	-
DYNAFAX	D1	MF	97335		BURST	-	-	813	9	25000		1MUSEC	2000
DYNAFAX	D2	MF	97336		BURST	-	-	76	2.8	25000		5MUSEC	2000
ROBOT	OUTSIDE	EDER	97334		VARIABLE	-	-	45	2.8	*(B)	-	*(C)	-

* (A) SINGLE EXPOSURE AT 936 MUSEC.
* (B) 1/3 FR/SEC FROM -30 SEC TO +30 SEC, THEN 30-SEC EXPOSURE TO END.
* (C) 1-SEC EXPOSURE FROM -30 SEC TO +30 SEC, THEN 30-SEC EXPOSURE TO END.
* (D) ND-2 AND F/22 FROM -5 SEC TO +20 SEC, NO ND AND F/2.3 FROM +20 SEC TO END.
* (E) ND-2 FROM -5 SEC TO +20 SEC, NO ND FROM +20 SEC TO END.

N.B. MUSEC = MUS = MICROSECOND

TABLE 8.1 SUMMARY OF STAR FISH PRIME CAMERA AND SPECTROGRAPH PARAMETERS, SAMOA

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
KC-1	1	TXA	93401	34.5	234	-	-	152	6.3	0.0083 3	-	120SEC	CLOCK
KC-1	2	TXA	93402	36.3	300	-	-	152	6.3	0.0083 3	-	120SEC	CLOCK
ROBOT	3	RXP	93403	VARIABLE		-	3914 A	45	2.8	MANUAL	-	-	-
ROBOT	4	RXP	93404	VARIABLE		-	4278 A	45	2.8	MANUAL	-	-	-
ROBOT	5	RXP	93405	VARIABLE		-	-	45	2.8	MANUAL	-	-	-
ROBOT	6	RXP	93406	VARIABLE		-	4709 A	45	2.8	MANUAL	-	-	-
ROBOT	7	RXP	93407	VARIABLE		-	5577 A	45	2.8	MANUAL	-	-	-
ROBOT	8	RXP	93408	VARIABLE		-	6300 A	45	2.8	MANUAL	-	-	-
MITCHELL H.S.	9	RXP	93409	15	230	-	-	25	2.3	100	170	4.7MSEC	200
BELL AND HOWELL	10	EDER	93410	15	245	-	-	25	2.3	1	170	0.47SEC	10
BELL AND HOWELL	11	RXP	93411	15	295	-	-	25	2.3	1	170	0.47SEC	10
BELL AND HOWELL	12	EDER	93412	15	230	-	-	25	2.3	12	170	39.2MSEC	10
CLOUD	13	DXN	93413	13.6	300	-	-	105	3.7	0.016	-	60SEC	CLOCK
CLOUD	14	EDER	93414	13.6	260	-	-	105	3.7	0.016	-	60SEC	CLOCK
TRAID	15	RXP	93415	15	255	-	-	25	2.3	12	160	37MSEC	10
TRAID	16	RXP	93416	15	305	-	-	25	2.3	12	160	37MSEC	10
ROBOT	18	RXP	93418	VARIABLE		-	-	45	2.8	MANUAL	-	-	-
GSAP	20	TXR	93420	VARIABLE		-	-	9.5	2.2	16	133	23MSEC	-
GSAP	21	TXR	93421	VARIABLE		-	-	3.45	1.5	16	133	23MSEC	-
GSAP	22	TXR	93422	VARIABLE		-	-	9.5	2.2	16	133	23MSEC	-
YASHICA	23	RXP	93423	VARIABLE		-	-	80	3.5	-	-	-	-
YASHICA	24	EDER	93424	VARIABLE		-	-	80	3.5	-	-	-	-

TABLE 8.2 SUMMARY OF STAR FISH PRIME CAMERA PARAMETERS, FIJI

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
GSAP	4	TXR	93501	10	90	-	-	3.45	1.5	16	133	0.023SEC	-
GSAP	3	TXR	93502	10	90	-	-	9.5	2.5	16	133	0.023SEC	-
HASSELBLAD	2	RXP	93503	10	90	-	-	38	4.5	MANUAL	-	-	-
YASHICA	1	EDER	93506	10	90	-	-	80	3.5	MANUAL	-	-	-

TABLE 8.3 SUMMARY OF STAR FISH PRIME CAMERA PARAMETERS, TONGA

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
GSAP	4	TXR	93601	15	12.5	-	-	3.45	1.5	16	133	0.023SEC	-
GSAP	3	TXR	93602	15	12.0	-	-	9.5	2.2	16	133	0.023SEC	-
HASSELBLAD	2	EDER	93603	20	0	-	-	38	4.5	MANUAL	-	-	-
YASHICA	1	RXP	93606	25	0	-	-	80	3.5	MANUAL	-	-	-

TABLE 8.4 SUMMARY OF STAR FISH PRIME CAMERA PARAMETERS, MAUNA LOA

INSTRUMENT AND STATION POSITION	FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
MITCHELL H.S.	EDER	93701	17.5	257	-	-	25	2.3	100	170	4.7MSEC	-
CLOUD	EDER	93702	6.5	257	-	-	305	6.8	5	-	5SEC	-
GSAP	KDII	93703	14	257	-	-	18	2.5	100	133	3.7MSEC	-
GSAP	KDII	93704	14	257	-	-	18	2.5	16	133	0.023SEC	-
EXACTA	EDER	93706	10.5	VAR	-	-	55	2.5	MANUAL	-	0.023SEC	-
ROBOT	EDER	93707	14.5	VAR	-	-	45	2.8	MANUAL	-	-	-
MINOLTA	TX	93709	22	VAR	-	-	55	1.8	MANUAL	-	-	-

TABLE 8.16 SUMMARY OF CHECK MATE CAMERA AND SPECTROGRAPH PARAMETERS, SAMOA

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
MITCHELL HS	40	RXP	94440	15	300	-	-	25	2.3	100	170	4.7MSEC	-
FAIRCHILD	34	EDER	94434	15	300	-	-	35	2.0	100	-	3.3MSEC	-
FAIRCHILD HS-100	35	EDER	94435	15	300	-	-	13	1.5	50	-	6.7MSEC	-
BELL AND HOWELL	20	EDER	94420	15	255	-	-	25	2.3	1	170	0.47SEC	-
BELL AND HOWELL	23	EDER	94423	15	305	-	-	25	2.3	1	170	0.47SEC	-
BELL AND HOWELL	43	EDER	94443	15	305	-	-	25	2.3	12	170	0.039SEC	-
TRAID	30	EDER	94430	15	270	-	-	25	2.3	12	160	0.037SEC	-
TRAID	31	EDER	94431	15	225	-	2	5	2.3	12	160	0.037SEC	-
FLIGHT RESEARCH-PULSED	25	EDER	94425	18	255	-	-	18.5	2.2	0.2	130	5SEC	-
FLIGHT RESEARCH-PULSED	44	EDER	94444	18	305	-	-	18.5	2.2	0.2	130	5SEC	-
CLOUD	33	EDER	94433	13	300	-	-	105	3.7	0.066	-	15SEC	-
CLOUD	32	EDER	94432	13	260	-	-	105	3.7	0.066	-	15SEC	-
BEATTIE-COLEMAN	24	EDER	94424	10	240	-	-	105	3.5	*(A)	-	-	-
BEATTIE-COLEMAN	45	EDER	94445	10	280	-	-	105	3.5	*(A)	-	-	-
KC-1	10	TXA	94410	35	234	-	-	152	6.3	0.033	-	30SEC	-
KC-1	11	TXA	94411	15	300	-	-	152	6.3	0.033	-	30SEC	-
GSAP	42	EDER	94442	15	330	-	-	9.5	2.2	16	133	0.023SEC	-
GSAP	41	EDER	94441	15	290	-	-	9.5	2.2	16	133	0.023SEC	-
GSAP	22	EDER	94422	15	250	-	-	9.5	2.2	16	133	0.023SEC	-
GSAP	21	EDER	94421	10	210	-	-	18	2.5	16	133	0.023SEC	-
ROBOT	51	RXP	94451	VARIABLE		-	3914 A	45	2.8	MANUAL	-	-	-
ROBOT	52	RXP	94452	VARIABLE		-	4278 A	45	2.8	MANUAL	-	-	-
ROBOT	53	RXP	94453	VARIABLE		-	4709 A	45	2.8	MANUAL	-	-	-
ROBOT	54	RXP	94454	VARIABLE		-	5577 A	45	2.8	MANUAL	-	-	-
ROBOT	55	RXP	94455	VARIABLE		-	6300 A	45	2.8	MANUAL	-	-	-
ROBOT	56	EDER	94456	VARIABLE		-	-	45	2.8	MANUAL	-	-	-
YASHICA	62	EDER	94462	VARIABLE		-	-	80	3.5	MANUAL	-	-	-
YASHICA	72	EDER	94472	VARIABLE		-	-	80	3.5	MANUAL	-	-	-
YASHICA	81	EDER	94481	VARIABLE		-	-	80	3.5	MANUAL	-	-	-
YASHICA	82	EDER	94482	VARIABLE		-	-	80	3.5	MANUAL	-	-	-
MOCK SPECTROGRAPH	61	MAG TAPE	94461	VARIABLE		-	-	-	-	MANUAL	-	-	-
HUET SPECTROGRAPH	71	IF	94471	VARIABLE		-	-	-	-	MANUAL	-	-	-

*(A) 1-SEC EXPOSURES FROM -15SEC TO +2SEC, FOLLOWED BY EXPOSURES OF 3, 5, 20, 30, 60, 120, 240, AND 480 SECONDS' DURATION.

TABLE 8.17 SUMMARY OF CHECK MATE CAMERA PARAMETERS, FIJI

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
GSAP	1	EDER	94501	15	60	-	-	9.5	2.2	16	133	0.023SEC	-
GSAP	2	EDER	94502	15	80	-	-	9.5	2.5	16.66	133	0.022SEC	-
FLIGHT RESEARCH-PULSED	3	EDER	94503	15	70	-	-	35	2.5	0.5	130	-	-
ROBOT	4	EDER	94504	15	70	-	-	45	2.8	0.05	-	-	-
YASHICA	5	EDER	94505	15	60	-	-	80	3.5	0.0083 .0033	-	-	-
YASHICA	6	EDER	94506	15	80	-	-	80	3.5	0.0083 .0033	-	-	-
HASSELBLAD	7	EDER	94507	30	70	-	-	38	4.5	0.0016	-	-	-

TABLE 8.18 SUMMARY OF CHECK MATE CAMERA PARAMETERS, TONGA

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
GSAP	1	EDER	94601	15	0	-	-	9.5	2.2	16.66	133	0.022SEC	-
GSAP	2	EDER	94602	15	0	-	-	9.5	2.2	16.66	133	0.022SEC	-
FLIGHT RESEARCH-PULSED	3	EDER	94603	15	0	-	-	35	2.5	0.5SEC	-	-	-
ROBOT	4	EDER	94604	15	0	-	-	45	2.8	0.05	-	-	-
YASHICA	5	EDER	94605	15	0	-	-	80	3.5	0.0083 .0033	-	-	-
YASHICA	6	EDER	94606	15	0	-	-	80	3.5	0.0083 .0033	-	-	-
HASSELBLAD	7	EDER	94607	15	0	-	-	38	4.5	0.0016	-	-	-

TABLE 8.19 SUMMARY OF CHECK MATE CAMERA PARAMETERS, MAUNA LOA

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
MITCHELL H.S.	1-1	EDER	94701	-	259	-	-	25	2.3	100	170	4.7MSEC	50
CLOUD	3-2	EDER	94702	5	259	-	-	400	5.7	0.5	-	5SEC	CLOCK
GSAP	3-3	EDER	94703	9	259	-	-	18	2.2	16	133	0.023SEC	-
GSAP	1-3	KDII	94704	9	259	-	-	18	2.2	16	133	0.023SEC	-
GSAP	1-2	HSIR	94705	9	259	-	-	18	2.5	16	133	0.023SEC	-
EXACTA	14	EDER	94706	10	200	-	-	58	1.8	0.033	-	2MIN	-
ROBOT	2-1	EDER	94707	12	259	-	-	45	2.8	0.083	-	10SEC	-
LEICA	15	EDER	94708	VARIABLE		-	-	35	2.0	VARIAB LE		VARIABLE	-
MINOLTA	16	EDER	9 709	10	259	-	-	50	1.8	*(C)		*(C)	-
BEATTIE-COLEMAN	1-4	EDER	94710	12	259	-	-	105	4.5	*(A)	-	*(A)	-
BEATTIE-COLEMAN	3-5	EDER	94711	12	200	-	-	105	3.5	*(A)	-	*(A)	-
FLIGHT RESEARCH-PULSED	2-3	EDER	94712	10	259	-	-	18.5	2.2	*(B)	130	*(B)	-
FLIGHT RESEARCH-PULSED	2-4	EDER	94713	10	259	-	-	35	2.3	*(B)	130	*(B)	-
SPEED GRAPHIC	13	XR	94717	-	200	-	-	162	4.7	0.083	-	300SEC	-
ROBOT	2-2	XR	94718	12	259	-		45	2.8	0.083	-	10SEC	-
GSAP	3-4	EDER	94719	9	259	-	-	18	2.2	16	133	0.023SEC	-

*(A) 1-SEC EXPOSURES FROM -15SEC TO +2SEC, FOLLOWED BY EXPOSURES OF 3, 5, 20, 30, 60, 120, 240, AND 480 SECONDS' DURATION.
*(B) 10 FR/SEC FROM -5SEC TO +20SEC, THEN 0.1 FR/SEC TO END.
*(C) 0.2 FR/SEC FROM -5SEC TO +30SEC, THEN 0.2 FR/MIN TO END.

TABLE 8.28 SUMMARY OF BLUE GILL TRIPLE PRIME CAMERA AND SPECTROGRAPH PARAMETERS, SAMOA

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
MITCHELL H.S.	40	RXP	95440	15	300	-	-	25	2.3	100	170	4.7MSEC	-
FAIRCHILD	34	EDER	95434	15	300	-	-	35	2	100	-	3.3MSEC	-
FAIRCHILD	35	EDER	95435	15	300	-	-	13	1.5	50	-	6.7MSEC	-
BELL AND HOWELL	20	EDER	95420	15	255	-	-	25	2.3	1	170	0.47SEC	-
BELL AND HOWELL	23	EDER	95423	15	305	-	-	25	2.3	1	170	0.47SEC	-
BELL AND HOWELL	43	EDER	95443	15	305	-	-	25	2.3	12	170	0.039SEC	-
TRAID	30	EDER	95430	15	255	-	-	25	2.3	12	160	0.037SEC	-
TRAID	31	EDER	95431	15	280	-	-	25	2.3	12	160	0.037SEC	-
FLIGHT RESEARCH-PULSED	25	EDER	95425	18	255	-	-	18.5	2.2	0.2	-	-	-
FLIGHT RESEARCH-PULSED	44	EDER	95444	18	305	-	-	18.5	2.2	0.2	-	-	-
CLOUD	33	EDER	95433	13	300	-	-	105	3.7	0.066	-	-	-
CLOUD	32	EDER	95432	13	260	-	-	105	3.7	0.066	-	-	-
BEATTIE-COLEMAN	24	EDER	95424	10	300	-	-	105	3.5	*(A)	-	-	-
BEATTIE-COLEMAN	45	EDER	95445	10	260	-	-	105	3.5	*(A)	-	-	-
KC-1B	10	TXN	95410	15	270	-	-	152	6.3	0.1	-	-	-
KC-1B	11	TXN	95411	15	270	-	-	152	6.3	0.033	-	-	-
GSAP	42	EDER	95442	15	330	-	-	9.5	2.2	16	133	0.023SEC	-
GSAP	41	EDER	95441	15	290	-	-	9.5	2.2	16	133	0.023SEC	-
GSAP	22	EDER	95442	15	250	-	-	9.5	2.2	16	133	0.023SEC	-
GSAP	21	EDER	95421	10	210	-	-	18	2.5	16	133	0.023SEC	-
ROBOT	51	RXP	95451	VARIABLE		-	3914 A	45	2.8	MANUAL	-	-	-
ROBOT	52	RXP	95452	VARIABLE		-	4278 A	45	2.8	MANUAL	-	-	-
ROBOT	53	RXP	95453	VARIABLE		-	4709 A	45	2.8	MANUAL	-	-	-
ROBOT	54	RXP	95454	VARIABLE		-	5577 A	45	2.8	MANUAL	-	-	-
ROBOT	55	RXP	95455	VARIABLE		-	6300 A	45	2.8	MANUAL	-	-	-
ROBOT	56	RXP	95456	VARIABLE		-	-	45	2.8	MANUAL	-	-	-
YASHICA	62	EDER	95462	VARIABLE		-	-	80	3.5	MANUAL	-	-	-
YASHICA	72	EDER	95472	VARIABLE		-	-	80	3.5	MANUAL	-	-	-
YASHICA	81	EDER	95481	VARIABLE		-	-	80	3.5	MANUAL	-	-	-
YASHICA	82	EDER	95482	VARIABLE		-	-	80	3.5	MANUAL	-	-	-
MOCK SPECTROGRAPH	61	MAG TAPE	95461	VARIABLE		-	-	-	-	MANUAL	-	-	-
HUET SPECTROGRAPH	71	IF	95471	VARIABLE		-	-	-	-	MANUAL	-	-	-

*(A) 1-SEC EXPOSURES FROM -15SEC TO +2SEC, FOLLOWED BY EXPOSURES OF 3, 5, 20, 30, 60, 120, 240, AND 480 SECONDS' DURATION.

TABLE 8.29 SUMMARY OF BLUE GILL TRIPLE PRIME CAMERA PARAMETERS, FIJI

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
GSAP	1	EDER	95501	15	60	-	-	9.5	2.2	16	133	0.023SEC	-
GSAP	2	EDER	95502	15	80	-	-	9.5	2.5	16.66	133	0.022SEC	-
FLIGHT RESEARCH-PULSED	3	EDER	95503	15	70	-	-	35	2.5	2	130	-	-
ROBOT	4	EDER	95504	15	70	-	-	45	2.8	20	-	-	-
YASHICA	5	EDER	95505	15	60	-	-	80	3.5	0.033 .083	-	-	-
YASHICA	6	EDER	95506	15	80	-	-	80	3.5	0.033 .083	-	-	-
HASSELBLAD	7	EDER	95507	30	70	-	-	38	4.5	0.166	-	-	-

TABLE 8.30 SUMMARY OF BLUE GILL TRIPLE PRIME CAMERA PARAMETERS, TONGA

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
GSAP	1	EDER	95601	15	0	-	-	9.5	2.2	16.66	133	0.022SEC	-
GSAP	2	EDER	95602	15	0	-	-	9.5	2.2	16.66	133	0.022SEC	-
FLIGHT RESEARCH-PULSED	3	EDER	95603	15	0	-	-	35	2.5	2	130	-	-
ROBOT-1052	4	EDER	95604	15	0	-	-	45	2.8	20	-	-	-
YASHICA	5	EDER	95605	15	0	-	-	80	3.5	0.033 .083	-	-	-
YASHICA	6	EDER	95606	15	0	-	-	80	3.5	0.033 .083	-	-	-
HASSELBLAD	7	EDER	95607	15	0	-	-	38	4.5	0.166	-	-	-

TABLE 8.31 SUMMARY OF BLUE GILL TRIPLE PRIME CAMERA PARAMETERS, MAUNA LOA

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
MITCHELL H.S.	1-1	EDER	95701	10	259	-	-	25	2.3	100	170	4.7MSEC	50
GSAP	1-2	HSIR	95705	10	259	-	-	18	2.5	16	133	0.023SEC	-
GSAP	1-3	KDII	95704	10	259	-	-	18	2.2	16	133	0.023SEC	-
BEATTIE-COLEMAN	1-4	EDER	95710	10	259	-	-	105	4.5	*(A)	-	-	-
ROBOT	2-1	EDER	95707	10	259	-	-	45	2.8	0.083	-	10SEC	-
ROBOT	2-2	ER	95718	10	259	-	-	45	2.8	0.083	-	10SEC	-
FLIGHT RESEARCH-PULSED	2-3	EDER	95712	10	259	-	-	18.5	2.2	*(B)	-	-	-
FLIGHT RESEARCH-PULSED	2-4	EDER	95713	10	259	-	-	35	2.3	*(B)	-	-	-
CLOUD	3-2	EDER	95702	10	259	-	-	400	3.7	0.2	-	2SEC	-
GSAP	3-3	KDII	95703	10	259	-	-	18	2.2	16	133	0.023SEC	-
GSAP	3-4	EDER	95719	10	259	-	-	18	2.2	16	133	0.023SEC	-
BEATTIE-COLEMAN	3-5	EDER	95711	10	200	-	-	105	3.5	*(A)	-	-	-
SPEED GRAPHIC	13	XR	95717	VAR	-	-	-	160	4.7	0.0033	-	5MIN	-
MINOLTA	14	EDER	95709	10	259	-	-	50	1.8	0.0083 3	-	2MIN	-
EXACTA	15	EDER	95706	10	200	-	-	58.	1.8	0.0083 3	-	2MIN	-
LEICA	16	EDER	95708	VAR	-	-	-	3.5	2	VAR	-	VAR	-

*(A) 1-SEC EXPOSURES FROM -15SEC TO +2SEC, FOLLOWED BY EXPOSURES OF 3, 5, 20, 30, 60, 120, 240, AND 480 SECONDS' DURATION.
*(B) 10 FR/SEC FROM -5SEC TO +20SEC, THEN 0.1 FR/SEC TO END.

TABLE 8.41 SUMMARY OF KING FISH CAMERA AND SPECTROGRAPH PARAMETERS, SAMOA

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
MITCHELL H.S.	40	EDER	96440	12	270	-	-	25	2.3	100	170	4.7MSEC	-
FAIRCHILD	34	EDER	96434	12	270	-	-	35	2.0	100	-	3.3MSEC	-
FAIRCHILD	35	EDER	96435	12	260	-	-	13	1.5	50	-	6.7MSEC	-
BELL AND HOWELL	20	EDER	96420	12	280	-	-	25	2.3	1	170	0.47SEC	-
BELL AND HOWELL	23	EDER	96423	12	260	-	-	25	2.3	1	170	0.47SEC	-
BELL AND HOWELL	43	EDER	96443	12	270	-	-	25	3.2	12	170	0.039SEC	-
TRAID	30	EDER	96430	12	290	-	-	25	2.3	12	160	0.037SEC	-
TRAID	31	EDER	96431	12	250	-	-	25	2.	12	160	0.037SEC	-
FLIGHT RESEARCH-PULSED	25	EDER	96425	15	260	-	-	18.5	2.2	0.2	-	-	-
FLIGHT RESEARCH-PULSED	44	EDER	96444	15	280	-	-	18.5	2.2	0.2	-	-	-
CLOUD	33	EDER	96433	12	280	-	-	105	3.7	-	-	-	-
CLOUD	32	EDER	96432	12	260	-	-	105	3.7	-	-	-	-
BEATTIE-COLEMAN	24	EDER	96424	12	260	-	-	105	3.5	*(A)	-	*(A)	-
BEATTIE-COLEMAN	45	EDER	96445	12	280	-	-	105	3.5	*(A)	-	*(A)	-
KC-1B	10	TXA	96410	15	270	-	-	152	6.3	-	-	-	-
KC-1B	11	TXA	96411	15	270	-	-	152	6.3	-	-	-	-
GSAP	42	EDER	96442	15	270	-	-	9.5	2.2	16	133	0.023SEC	-
GSAP	41	EDER	96441	15	270	-	-	9.5	2.2	16	133	0.023SEC	-
GSAP	21	EDER	96421	15	290	-	-	18	2.5	16	133	0.023SEC	-
GSAP	22	EDER	96422	15	250	-	-	9.5	2.2	16	133	0.023SEC	-
YASHICA	81	EDER	96481	VARIABLE		-	-	80	3.5	MANUAL	-	-	-
YASHICA	82	EDER	96482	VARIABLE		-	-	80	3.5	MANUAL	-	-	-

* (A) 1 FR/SEC, 0.5 FR/SEC, 0.2 FR/SEC, 0.1 FR/SEC UP TO +10 SEC, +60 SEC, +180 SEC, 1,800 SEC, RESPECTIVELY.

TABLE 8.42 SUMMARY OF KING FISH CAMERA PARAMETERS, FIJI

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
GSAP	1	EDER	96501	15	60	-	-	9.5	2.2	16	133	0.023SEC	-
GSAP	2	EDER	96502	15	80	-	-	9.5	2.2	16.66	133	0.022SEC	-
FLIGHT RESEARCH-PULSED	3	EDER	96503	15	70	-	-	35	2.5	0.5	-	2SEC	-
ROBOT	4	EDER	96504	15	70	-	-	45	2.8	0.05	-	2SEC	-
YASHICA	5	EDER	96505	15	60	-	-	80	3.5	0.0033	-	5MIN	-
YASHICA	6	EDER	96506	15	80	-	-	80	3.5	0.0003 3	-	5MIN	-
HASSELBLAD	7	EDER	96507	30	70	-	-	38	4.5	0.0016	-	10MIN	-

TABLE 8.43 SUMMARY OF KING FISH CAMERA PARAMETERS, TONGA

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
GSAP	1	EDER	96601	15	0	-	-	9.5	2.2	16.66	133	0.022SEC	-
GSAP	2	EDER	96602	15	0	-	-	9.5	2.2	16.66	133	0.022SEC	-
FLIGHT RESEARCH-PULSED	3	EDER	96603	15	0	-	-	35	2.5	0.5	-	-	-
ROBOT	4	EDER	96604	15	0	-	-	45	2.8	0.05	-	-	-
YASHICA	5	EDER	96605	15	0	-	-	80	3.5	0.0033	-	-	-
YASHICA	6	EDER	96606	15	0	-	-	80	3.5	0.0033	-	-	-
HASSELBLAD	7	EDER	96607	15	0	-	-	38	4.5	0.0016	-	-	-

TABLE 8.44 SUMMARY OF KING FISH CAMERA PARAMETERS, MAUNA LOA

INSTRUMENT AND STATION POSITION		FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREE ELEV	AZIMUTH	FILTERS ND	COLOR	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE CPS
MITCHELL H.S.	1-1	EDER	96701	0	259	-	-	25	2.3	100	170	4.7MSEC	50
GSAP	1-2	HSIR	96705	10	259	-	-	18	2.5	16	133	0.023SEC	-
GSAP	1-3	KDII	96719	10	259	-	-	18	2.2	16	133	0.023SEC	-
BEATTIE-COLEMAN	1-4	EDER	96710	12	059	-	-	105	3.5	*(A)	-	-	-
ROBOT	2-1	EDER	96707	12	259	-	-	4.5	2.8	0.083	-	10SEC	-
ROBOT	2-2	EDER	96718	12	259	-	-	4.5	2.8	0.083	-	10SEC	-
FLIGHT RESEARCH-PULSED	2-3	EDER	96712	10	259	-	-	18.5	2.2	*(B)	-	*(B)	-
FLIGHT RESEARCH-PULSED	2-4	EDER	96713	10	259	-	-	35	2.3	*(B)	-	*(B)	-
CLOUD	3-2	EDER	96702	10	259	-	-	400	3.7	0.2	-	5SEC	-
GSAP	3-3	XR	96703	10	259	-	-	18	2.2	16	133	0.023SEC	-
GSAP	3-4	XR	96704	10	259	-	-	18	2.2	16	133	0.023SEC	-
BEATTIE-COLEMAN	3-5	EDER	96711	10	200	-	-	105	3.5	*(A)	-	*(A)	-
SPEED GRAPHIC	13	XR	96717	VAR	-	-	-	162	4.7	0.0033	-	5MIN	-
MINOLTA	14	EDER	96709	10	259	-	-	50	1.8	0.0083	-	2MIN	-
EXACTA	15	EDER	96716	10	200	-	-	58	1.8	0.0083	-	2MIN	-
LEICA	16	EDER	96708	VAR	-	-	-	3.5	2.0	VAR			

*(A) 1-SEC EXPOSURES FROM -15SEC TO +2SEC, FOLLOWED BY EXPOSURES OF 3, 5, 20, 30, 60, 120, 240, AND 480 SECONDS' DURATION.
*(B) 10 FR/SEC FROM -5SEC TO +20SEC, THEN 0.1 FR/SEC TO END.

TABLE 9.3 SUMMARY OF STAR FISH PRIME SPECTROGRAPH PARAMETERS

INSTRUMENT	FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	WAVELENGTH COVERAGE, ANGSTROMS	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE, CPS
JACO 1.5M	HSIR	93105	45.26	-	2100-7000	-	-	-	-	2SEC	-
MOD 70	TXA	93128	44.8	-	3500-6750	(A)	-	(B)	-	-	200
JACO 75,000 (PROG)	IF	93130	38.21	-	3350-6800	-	-	(C)	-	-	-
JACO 1.5M	HSIR	93205	25.4	-	2100-7000	-	-	-	-	200MUSEC	-
MOD 70	TXA	93228	25.6	-	3500-6750	(A)	-	(B)	-	-	200
JACO 75,000 (PROG)	IF	93230	54.4	-	3350-6800	-	-	(D)	-	-	-
JACO 1.57 (U.V.)	103-OUV	93305	85.28	199.0	2025-4850	150	24	-	-	100MUSEC	-
JACO 75,000 (CINE)	DXN	93331	85.28	199.0	4560-5740	210	6.3	360	60	-	50
JACO 75,000 (CINE)	DXN	93330	70	10	5228-6450	210	6.3	360	60	-	50
JACO 75,000 (PROG. U.V.)	103-OUV	93333	80.35	7.70	2000-5200	-	-	(E)	-	-	-

(A) USED AS OBJECTIVE SPECTROGRAPH. WAVELENGTH POSITION ON FILM DETERMINED BY BURST LOCATION.
(B) CONTINUOUS FILM ACTION, 50FT/SEC.
(C) PLATE POSITION CHANGED AT +1SEC, +5SEC, +15SEC, +60SEC, +240SEC. SHUTTER CLOSED AT +1050SEC.
(D) PLATE POSITION CHANGED AT +1SEC, +12SEC, +30SEC, +116SEC, +360SEC. SHUTTER CLOSED AT +1080SEC.
(E) PLATE POSITION CHANGED AT +1SEC, +10SEC, +60SEC, +405SEC, AND +2820SEC. SHUTTER CLOSED AT +3870SEC.
N.B. MUSEC = MUS = MICROSECOND

TABLE 9.11 SUMMARY OF CHECK MATE SPECTROGRAPH PARAMETERS

INSTRUMENT	FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	WAVELENGTH COVERAGE, ANGSTROMS	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE, CPS
JACO 1.5M	HSIR	94105	30	0	2100-7800	-	-	-	-	80MUSEC	-
MOD 70	TXA	94128	30	0	3500-6750	(A)	-	(B)	-	-	200
JACO 75,000 (PROG)	IF	94130	39	0	3350-6800	-	-	(C)	-	(C)	-
MOD 70	TXA	94228	30	0	3500-6750	(A)	-	(B)	-	-	200
JACO 1.5M (U.V.)	103-OUV	94305	64.28	191.75	2025-4850	-	-	-	-	100MUSEC	-
JACO 75,000 (CINE)	DXN	94330	64.28	191.75	4560-5740	210	4.0	STATIC	60	10MIN	-
JACO 75,000 (CINE)	DNX	94331	40.00	10.49	5228-6450	210	4.0	STATIC	60	10MIN	-
JACO 75,000 (PROG. U.V.)	103-OUV	94333	64.28	191.75	2000-5200	-	-	(D)	-	(D)	-
JACO 1.5M (I.R.)	IRA	94337	64.28	191.75	4600-9000					2SEC	-
JACO 75,000 (PROG. I.R.)	I-N	94338	64.28	191.75	5700-9000			(D)	-	(D)	-

(A) USED AS OBJECTIVE SPECTROGRAPH. WAVELENGTH POSITION ON FILM DETERMINED BY BURST LOCATION.
(B) CONTINUOUS FILM ACTION, 60FT/SEC.
(C) PLATE POSITION CHANGED AT +1SEC, +119SEC, AND +240SEC. SHUTTER CLOSED AT 1920SEC.
(D) PLATE POSITION CHANGED AT +1SEC. SHUTTER CLOSED AT +90SEC.
N.B. MUSEC = MUS = MICROSECOND

TABLE 9.18 SUMMARY OF BLUE GILL TRIPLE PRIME SPECTROGRAPH PARAMETERS

INSTRUMENT	FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	WAVELENGTH COVERAGE, ANGSTROMS	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE, CPS
JACO 1.5M	HSIR	95105	30	0	2100-7000	-	-	-	-	80MUSEC	-
MOD 70	TXA	95128	30	0	3500-6750	-	-	(A)	-	1MUSEC	200
JACO 75,000 (PROG.)	IF	95130	38.5	0	3300-6800	-	-	(B)	-	(B)	-
MOD 70	TXA	95228	30	0	4400-7000	-	-	(A)	-	1MUSEC	200
JACO 1.5M (U.V.)	103-OUV	95305	54.35	192.18	2025-4850	300	18	-	-	100MUSEC	-
JACO 75,000 (CINE)	PX	95330	54.35	191.18	4560-5740	210	6.3	360	1	7.7MUSEC	50
JACO 75,000 (CINE)	PX	95331	54.35	193.18	5228-6450	210	6.3	360	1	7.7MUSEC	50
JACO 75,000 (PROG. U.V.)	103-OUV	95333	59	192.18	2000-5200	-	-	(C)	-	(C)	-
JACO 1.5M (I.R.)	HSIR	95337	54.35	192.18	4600-9000	300	18	-	-	100MUSEC	-
JACO 75,000 (PROG. I.R.)	IN	95338	59	192.18	5750-9000	-	-	(C)	-	(C)	-

(A) CONTINUOUS FILM ACTION, 60FT/SEC.
(B) PLATE POSITION CHANGED AT +8SEC, +16SEC, +28SEC, +60SEC, AND +119SEC.
SHUTTER CLOSED AT +240SEC.
(C) PLATE POSITION CHANGED AT +1SEC, +4SEC, +8SEC, +14SEC, AND +29SEC.
SHUTTER CLOSED AT +90SEC.
N.B. MUSEC = MUS = MICROSECOND

TABLE 9.25 SUMMARY OF KING FISH SPECTROGRAPH PARAMETERS

INSTRUMENT	FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	WAVELENGTH COVERAGE, ANGSTROMS	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE, CPS
JACO 1.5M	HSIR	96105	30	0	2100-7000	-	-	-	-	8SEC	-
MOD 70	TXA	96128	30	0	3500-6750	-	-	(A)	-	-	200
JACO 75,000 (PROG.)	IF	96130	38.5	0	3350-6800	-	-	(B)	-	(C)	-
MOD 70	TXA	96228	30	0	4300-7000	-	-	(C)	-	3MUSEC	200
JACO 1.5M (U.V.)	103-OUV	96305	51.00	191.95	2025-4850	85	5	-	-	100MUSEC	-
JACO 75,000 (CINE)	DNX	96330	52.73	191.35	4320-5440	18	2.5	360	60	0.46MSEC	50
JACO 75,000 (CINE)	DNX	96331	52.73	192.55	5210-6430	18	2.5	360	60	0.46MSEC	50
JACO 75,000 (PROG. U.V.)	103-OUV	96333	57.00	191.95	2000-5200	-	-	(D)	-	(D)	-
JACO 1.5M (I.R.)	HSIR	96337	51.00	191.95	4600-9000	90	4.5	-	-	5X10-5	-
JACO 75,000 (PROG I.R.)	IN	96338	57.00	191.95	5750-9000	-	-	(D)	-	(D)	-

(A) CONTINUOUS FILM ACTION, 60FT/SEC.
(B) PLATE POSITION CHANGED AT +2SEC, +15SEC, +75SEC, +390SEC, AND +1470SEC. SHUTTER CLOSED AT +3900SEC.
(C) CONTINUOUS FILM ACTION , 43FT/SEC.
(D) PLATE POSITION CHANGED AT +1SEC, +8SEC, +29SEC, +90SEC, AND +300SEC. SHUTTER CLOSED AT +915SEC.
N.B. MUSEC = MUS = MICROSECOND

TABLE 9.32 SUMMARY OF TIGHT ROPE SPECTROGRAPH PARAMETERS

INSTRUMENT	FILM TYPE	FILM NUMBER	AIMING ANGLES IN DEGREES ELEV	AZIMUTH	WAVELENGTH COVERAGE, ANGSTROMS	FOCAL LENGTH MM	LENS F/N	FRAMES PER SECOND	SHUTTER SECTOR, DEGREES	EXPOSURE TIME	MARKER RATE, CPS
JACO 1.5M	HSIR	97105	25	0	2000-7000	-	-	-	-	8SEC	-
MOD 70	TXA	97128	25	0	3500-6750	-	-	(A)	-	-	200
JACO 75,000 (PROG.)	IF	97130	38.5	0	3300-6800	-	-	(B)	-	(B)	-
MOD 70	TXA	97228	25	0	4400-7000	-	-	(C)	-	3MUSEC	200
JACO 1.5M (U.V.)	103-OUV	97305	80.65	205.08	2025-4850	(2)	(2)	-	-	10MUSEC	-
JACO 75,000 (CINE)	PX	97330	80.65	196.08	4320-5440	210	4.5	360	60	0.46MSEC	50
JACO 75,000 (CINE)	PX	97331	80.65	214.08	5210-6430	210	4.5	360	60	0.46MSEC	50
JACO 75,000 (PROG. U.V.)	103-OUV	97333	82.00	205.08	2000-5200	-	-	(D)	-	(D)	-
JACO 1.5M (I.R.)	HSIR	97337	80.65	205.08	4600-9000	(5)	(5)	-	-	100MUSEC	-
JACO 75,000 (PROG. I.R.)	IN	97338	82.00	205.08	5800-9000	-	-	(D)	-	(D)	-

(A) CONTINUOUS FILM ACTION, 60FT/SEC.
(B) PLATE POSITION CHANGED AT +2SEC, +15SEC, +75SEC, +390SEC, AND +1470SEC. SHUTTER CLOSED AT +3900SEC.
(C) CONTINUOUS FILM ACTION, 43FT/SEC.
(D) PLATE POSITION CHANGED AT +1SEC, +8SEC, +29SEC, +90SEC, AND +300SEC. SHUTTER CLOSED AT +915SEC.
N.B. MUSEC = MUS = MICROSECOND

TABLE 3.7 SUMMARY OF STAR FISH PRIME FILM RECORDS, AIRCRAFT 53120

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
93104	PX	KFC-600	NO RECORD.
93109	DXN	CLOUD	SEVEN EXPOSED FRAMES. BURST APPEARS IN FIRST FRAME.
93110	EDER	CLOUD	TWO EXPOSED FRAMES. BURST IN FIRST FRAME.
93111	RXP	ROBOT	FOUR FRAMES. BURST APPEARS IN FIRST FRAME. 3914A FILTER.
93112	RXP	ROBOT	SERIES OF FRAMES SHOWING BURST DEVELOPMENT. 4278 A FILTER.
93113	RXP	ROBOT	SIMILAR TO 93112. 4709A FILTER.
93114	EDER	ROBOT	SIXTEEN FRAMES.
93115	RXP	ROBOT	SEVERAL EXPOSURES. NO DISCERNIBLE STRUCTURE. 5577A FILTER.
93116	RXP	ROBOT	LONG SERIES OF EXPOSED FRAMES. NO DISCERNIBLE STRUCTURE. 6300A FILTER.
93117	DXN	TRAID	VIEW OF BURST AREA SHOWING DEBRIS EXPANDING. STREAMERS APPEAR OVER BURST AREA IN NORTH-SOUTH DIRECTION. INCLINATION IS DOWN TOWARD NORTH AND UP TOWARD SOUTH.
93118	KDII	TRAID	FIRST FRAME STRONGLY EXPOSED WITH BLUISH WHITE COLOR. SECOND FRAME SHOWS GREEN. REMAINING FRAMES ARE BLUISH IN COLOR.
93119	DXN	TRAID	BURST SHOWS IN FIRST FRAME. VERY SHORTLY, STREAMERS DEVELOP APPARENTLY ALONG FIELD LINES.
93120	EDER	TRAID	FIRST THREE FRAMES SHOW BURST AND GREEN GLOW. COLOR THEN CHANGES TO BLUE FOR ABOUT ONE HUNDRED FRAMES.
93121	DXN	MAURER	GENERAL BRIGHTENING IN FIELD OF VIEW. NO DISCERNIBLE STRUCTURE. ABOUT 30 SECONDS OF RECORD.
93122	EDER	MAURER	NO RECORD.
93123	KDII	FAIRCHILD	FIRST FRAME SHOWS BURST WITH ASYMMETRICAL EXPANSION. VIOLET COLOR OVER ENTIRE FRAME. FOURTEEN USABLE FRAMES.
93124	KDII	GSAP	APPROXIMATELY FIFTY EXPOSED FRAMES. NO DISCERNIBLE STRUCTURE.
93125	DXN	PS-4C	NO RECORD.
93127	DXN	PS-10B	BURST APPEARS IN FIRST FRAME OFF-CENTER. ASYMMETRIC EXPANSION SHOWS CLEARLY. ALSO MAJOR EXPANSION AXIS IS TILTED WITH RESPECT TO HORIZON. WELL-EXPOSED RECORD FOR ABOUT THIRTY FRAMES. SKY BRIGHTNESS APPARENT FOR LONG TIME.

TABLE 3.8 SUMMARY OF STAR FISH PRIME FILM RECORDS, AIRCRAFT 53144

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
93203	TX	RAPATRONIC	SMALL IMAGE OF EXPANDING DEBRIS AT EARLY TIMES.
93204	PX	KFC-600	NO RECORD.
93209	DXN	CLOUD	TWO FRAMES EXPOSED. FIRST FRAME SHOWS STAR IMAGE OF BURST. SECOND FRAME ONLY SLIGHTLY EXPOSED.
93210	DXN	CLOUD	SIX DATA FRAMES. FIRST HEAVILY EXPOSED. SUCCEEDING FRAMES SHOW BURST AREA.
93211	RXP	ROBOT	ABOUT FIFTEEN USABLE FRAMES. FIRST TEN SHOW AURORAL STRUCTURE CLEARLY.
93212	RXP	ROBOT	ABOUT FIFTEEN TO TWENTY USABLE FRAMES. FIRST TEN FRAMES RESEMBLE 93211.
93213	RXP	ROBOT	ONLY ONE WELL-EXPOSED FRAME SHOWING AURORAL STRUCTURE.
93214	EDER	ROBOT	ABOUT EIGHT TO TEN GOOD FRAMES. FIRST FRAME OVEREXPOSED. REMAINDER SHOW GREEN AND BLUE-GREEN AURORAL STRUCTURE.
93215	RXP	ROBOT	APPROXIMATELY FIFTY USABLE FRAMES. AURORAL STRUCTURE APPARENT.
93216	RXP	ROBOT	APPROXIMATELY ONE HUNDRED EXPOSED FRAMES. LESS STRUCTURE THAN IN 93216.
93217	DXN	TRAID	NO RECORD.
93218	KDII	TRAID	FIRST FRAME OVEREXPOSED. SECOND FRAME GREEN. SUCCEEDING FRAMES BLUISH. ABOUT SEVENTY-FIVE FRAMES.
93219	DXN	TRAID	LONG RECORD. AURORAL STREAMER APPEARS IN MIDDLE OF FRAME.
93221	DXN	MAURER	FIRST FRAME SHOWS CONFINEMENT OF SOME DEBRIS TO BURST AREA. BRIGHT REGION APPEARS IN BOTTOM OF FRAME. APPROXIMATELY TEN USABLE FRAMES.
93222	DXN	MAURER	COMPANION INSTRUMENT TO 93221. CONTAINS APPROX-IMATELY SAME RECORD.
93223	KDII	FAIRCHILD HS-180	FIRST FRAME SHOWS BURST ASYMMETRY. BACKGROUND CONTAINS GENERAL VIOLET-PINKISH GLOW. TWELVE USABLE FRAMES.
93224	KDII	GSAP	FIRST FRAME SHOWS GENERAL GREEN SKY GLOW WITH CENTRAL WHITE BURST REGION SURROUNDED BY PINKISH REGION. MORE THAN FIFTY USABLE FRAMES.
93225	DXN	PS-4C	WIDE FIELD OF VIEW PICTURE OF BURST AREA SHOWING EARLY TIME DEVELOPMENT OF BURST. BRIGHT REGION DEVELOPS AT BOTTOM OF FRAME. RECORD APPROXIMATELY 20 MSEC LONG.
93226	DXN	PS-4C	BURST APPEARS IN VERY BOTTOM OF FIELD OF VIEW. BURST SHOWS CENTRAL CORE WITH OUTER SHELL. BRIGHT SPOT (PRESUMABLY BOOSTER) APPEARS. RECORD APPROX-IMATELY 15 MSEC LONG.
93227	DXN	PS-10B	GOOD RECORD OF BURST AREA SHOWING ASYMMETRY AND TILT OF BURST. DEBRIS EXPANSION SEEN CLEARLY. BRIGHT AREA APPEARS IN BOTTOM OF FRAME AND GROWS IN SIZE, EVENTUALLY COVERING ENTIRE FRAME. AURORAL STREAMERS FORM IN BRIGHT AREA. RECORD APPROXIMATELY 1/2 SECOND LONG.

TABLE 3.9 SUMMARY OF STAR FISH PRIME FILM RECORDS, JOHNSTON ISLAND

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
93303	TX	RAPATRONIC	NO RECORD.
93304	PX	KFC-600	NO RECORD.
93309	DXN	CLOUD	TIME EXPOSURES OF SKY JUST NORTH OF BURST AREA. DEVELOPMENT AND MOTION OF STREAMERS APPEARS. RECORD ARCS FOR SEVERAL MINUTES.
93310	EDER	CLOUD	DEVELOPED AS BLACK AND WHITE. TO BE REHALOGENATED.
93311	RXP	ROBOT	BURST APPEARS IN FIRST FRAME. TOTAL RECORD FOUR FRAMES. 4278A FILTER.
93312	RXP	ROBOT	NO RECORD. 4709A FILTER.
93313	RXP	ROBOT	VIEW OF SKY NORTH OF BURST. FIVE FRAMES SHOW EXPOSURE. 5228 A FILTER.
93314	RXP	ROBOT	VIEW OF SKY NORTH OF BURST. LONG RECORD. 6300A FILTER.
93315	RXP	ROBOT	APPROXIMATELY TWELVE EXPOSED FRAMES. NO STRUCTURE 3914A FILTER.
93317	DXN	TRAID	WIDE FIELD OF VIEW PICTURE OF BURST SHOWING DEBRIS EXPANSION. STREAMERS GOING IN NORTH-SOUTH DIRECTION DEVELOP AFTER SEVERAL SECONDS. RECORD ABOUT 2-3 MINUTES LONG.
93318	XR	TRAID	FORTY EXPOSED FRAMES, UNINTERESTING RECORD. SHOWS NO FIREBALL OR AURORA STRUCTURE.
93319	DXN	MAURER	BURST AREA REGION. APPROXIMATELY TWENTY DATA FRAMES.
93320	EDER	MAURER	SINGLE GREEN-COLORED FRAME FOLLOWED BY SIX BLUE FRAMES. NO STRUCTURE. ROCKET TRAILS SHOW.
93321	KDII	FAIRCHILD HS-100	GOOD RECORD SHOWING BURST FOLLOWED BY DEBRIS MOTION. ROCKET TRAIL PARTIALLY OBSCURES FIELD OF VIEW.
93322	KDII	GSAP	FIRST THREE FRAMES SHOW BURST. FIRST FRAME OVEREXPOSED. SECOND FRAME SHOWS GREEN BACKGROUND. CAMERA JAMMED INTERMITTENTLY. ABOUT THIRTY USABLE FRAMES.
93323	DXN	PS-4C	GOOD HIGH-SPEED RECORD OF BURST EXPANSION. GENERAL BURST SHAPE IS DENSE CENTRAL CORE SURROUNDED BY EXPANDING SHELL.
93324	DXN	PS-4C	SIMILAR TO 93333 EXCEPT LESS MAGNIFICATION.
93325	DXN	PS-10B	FIRST FRAME OVEREXPOSED. SUCCEEDING EIGHT OR TEN FRAMES GIVE GOOD RECORD OF EXPANDING DEBRIS. RECORD CONTINUES FOR LONG TIME.
93326	DXN	MITCHELL HS	VIEW OF SKY NORTH OF BURST. SHOWS TRACE OF STREAMERS BEGINNING. CAMERA JAMMED AFTER FOUR HUNDRED AND THIRTY-SIX FRAMES.
93327	EDER	MITCHELL HS	BURST AREA PICTURES. SHOWS BLUE SKY INITIALLY. BACKGROUND CHANGES TO GREEN AND BACK TO BLUE.
93328	DXN	MITCHELL LS	VIEW OF SKY NORTH OF BURST. TWO FILAMENTARY STREAMERS DEVELOP HALFWAY THROUGH RECORD.
93329	EDER	B AND H	NORTHERN SKY VIEWS. GREEN SKY BACKGROUND PREDOMINATES.
93332	TXA	KC-1B	FIRST FRAME SHOWS BURST POINT, THIRTY-EIGHT FRAMES OF AURORAL STREAMERS OVER JOHNSTON ISLAND.
93334	EDER	ROBOT	SEVERAL FRAMES SHOWING STREAMERS IN SOUTHERN SKY.

TABLE 4.6 SUMMARY OF CHECK MATE FILM RECORDS, AIRCRAFT 53120

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
94103	XR	RAPATRONIC	NO RECORD.
94104	XR	KFC-600	FIRST FRAME SHOWS NO RECORD. FRAMES TWO THROUGH SIX SHOW EXPANDING SPOT IMAGE.
94109	DXN	CLOUD	SHOWS JETTING FIREBALL, AURORA, AND FIREBALL RISE. RECORD PERSISTS FOR ABOUT FORTY FRAMES.
94110	EDER	CLOUD	ONLY FIRST FRAME EXPOSED. NO USEFUL INFORMATION.
94111	RXP	ROBOT	FIFTEEN-FRAME RECORD, AURORA SEEN IN THREE FRAMES.
94112	RXP	ROBOT	39-FRAME RECORD SHOWING AURORA IN FIRST FRAME.
94113	RXP	ROBOT	24-FRAME RECORD SIMILAR TO OTHER ROBOT SEQUENCES.
94114	EDER	ROBOT	GREEN SKY AT BURST TIME, THEN BLUE SKY FOR ONE OR TWO FRAMES.
94115	RXP	ROBOT	ONLY TWO RECORD FRAMES. NO STRUCTURE.
94116	RXP	ROBOT	NO RECORD.
94117	DXN	TRAID	EXCELLENT RECORD OF BURST AND AURORAL STREAMERS. APPROXIMATELY 120 FEET OF RECORD.
94118	EDER	TRAID	20 FEET SHOWING A PINK FIREBALL WITH A RISING BLUE CORE. REGION OF X-RAY DEPOSITION APPEARS GREEN.
94119	EDER	TRAID	BURST OCCURRED BELOW FIELD OF VIEW BUT LATER RISES INTO VIEW. BLUE AURORA AND BLUE DEBRIS SEEN.
94120	XR	TRAID	VERY FAINT IMAGE OF LATE DEBRIS FOR A FEW FEET.
94121	EDER	MAURER	ABOUT THIRTY-FIVE FRAMES SHOWING DEBRIS AND CONTRACTING RINGS.
94122	XR	MAURER	SHOWS TWELVE TO FIFTEEN FRAMES OF DEBRIS GROWTH.
94123	KDII	FAIRCHILD HS-100	CENTRAL BRIGHT CORE, DEBRIS EXPANSION, AND ASYMMETRICAL SHOCK OBSERVED.
94124	KDII	GSAP	200-FRAME RECORD SHOWING BLUE AURORA, GREEN SKY, PINK DEBRIS RING AND BLUE CENTRAL CORE.
94125	DXN	PS-4C	BEAUTIFUL RECORD FOR 412 FEET SHOWING DEBRIS EXPANSION, FIREBALL JETTING, AND TURBULENCE.
94127	EDER	PS-10B	LONG RECORD OF DEBRIS EXPANSION.

TABLE 4.7 SUMMARY OF CHECK MATE FILM RECORDS, AIRCRAFT 60736

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
94203	XR	RAPATRONIC	NO RECORD.
94204	XR	RAPATRONIC	NO RECORD.
94205	XR	RAPATRONIC	NO RECORD.
94209	EDER	BC	SINGLE OVEREXPOSED FRAME.
94210	XR	BC	NO RECORD.
94211	RXP	FR-PULSED	NO SIGNIFICANT RECORD.
94212	RXP	FR-PULSED	3- TO 4-MINUTE RECORD SHOWS RISE AND ELONGATION OF BURST.
94213	RXP	FR-PULSED	RECORD OF LESS THAN ONE MINUTE SHOWS RAPIDLY DYING BURST.
94214	RXP	FR-PULSED	BURST FAINTLY RECORDED
94215	RXP	FR-PULSED	4-MINUTE RECORD. HOWEVER, BURST DOES NOT APPEAR CLEARLY.
94217	EDER	FR-CINE	50-FOOT RECORD SHOWS WHITE BURST AGAINST GREEN SKY, DEVELOPMENT OF PERSISTENT BLUE CORE, AND SOUTHERN AURORA.
94218	XR	FR-CINE	RECORD PARTIALLY OBSCURED BY INTERNAL MASK. 35 FEET SHOWING EXPANDING DEBRIS AND SURROUNDINGS.
94219	EDER	FR-CINE	BURST OCCURS IN LOWER RIGHT HAND CORNER OF FRAME AND RISES SLOWLY INTO VIEW.
94220	DXN	FR-CINE	VERY LONG RECORD IN WHICH BURST OCCURS INITIALLY BELOW FIELD OF VIEW, MOVING GRADUALLY INTO FIELD.
94221	EDER	BC	38 FRAMES.
94222	DXN	BC	GOOD RECORD SHOWING FIREBALL JETTING, FIREBALL RISE, SHOCK, AND AURORAL EFFECTS.
94223	XR	RAPATRONIC	NO RECORD.
94225	DXN	PS-4C	500 FEET OF RECORD BUT NOT VERY USEFUL BECAUSE BURST OCCURS IN SPROCKET HOLES.
94226	XR	PS-4C	NO USEFUL RESULTS. IMAGE IN SPROCKET HOLES.
94227	DXN	PS-10B	100 FEET OF RECORD SHOWING BURST ON RIGHT SIDE OF FRAME.

TABLE 4.8 SUMMARY OF CHECK MATE FILM RECORDS, JOHNSTON ISLAND

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
94303	XR	RAPATRONIC	GOOD PICTURE OF BURST.
94304	XR	KFC-600	NO RECORD.
94309	EDER	CLOUD	ABOUT TWENTY-EIGHT FRAMES SHOWING DEVELOPMENT AND EXPANSION OF DEBRIS ALONG FIELD LINES.
94310	EDER	CLOUD	NO RECORD.
94311	RXP	ROBOT	ONLY ONE FRAME SHOWING BURST.
94312	RXP	ROBOT	ONLY ONE GOOD EXPOSURE SHOWING WISHBONE OR HORSESHOE SHAPE OF DEBRIS CLOUD.
94313	RXP	ROBOT	ABOUT THIRTY FRAMES SHOWING BREAK-UP OF FIREBALL INTO TWO DISTINCT DEBRIS MASSES.
94314	RXP	ROBOT	ABOUT THIRTY-ONE GOOD FRAMES OF BURST SEQUENCE. DIFFERS SLIGHTLY FROM 94315.
94315	RXP	ROBOT	GOOD SERIES OF THIRTY PHOTOS SHOWING DEVELOPMENT.
94317	DXN	TRAID	RECORD SHOWS DISINTEGRATION OF CENTRAL MASS INTO TWO STREAKS AT LATE TIMES.
94318	XR	TRAID	SHOWS DEBRIS EXPANSION. PARTIALLY OBSCURED BY ROCKET TRAILS.
94319	XR	MAURER	GOOD SEQUENCE OBTAINED OF LATE DEBRIS DISTRIBUTION. ABOUT THIRTY FRAMES.
94320	EDER	MAURER	THIRTY-FIVE FRAMES SHOWING LATE DEBRIS EXPANSION AND CONTRACTING SHOCKS.
94321	KDI	FAIRCHILD HS-100	RECORD SHOWS EXPANDING SHOCK AND DEBRIS RING AS WELL AS JETS AND TURBULENCE.
94322	KDII	GSAP	200-FRAME RECORD SIMILAR TO RECORDS OBTAINED BY OTHER CAMERAS. EARLY GREEN GLOW OBSERVED.
94323	DXN	PS-4C	GOOD RECORD OF BURST EXTENDING TO END OF FILM.
94324	EDER	PS-4C	WHITE DEBRIS RING FOLLOWED BY TURBULENT EFFECTS.
94325	DXN	PS-10B	APPROXIMATELY 200 FEET. SHOWS INSTABILITIES IN EXPANDING SHELL.
94326	DXN	MITCHELL	BURST WELL CENTERED IN FRAME. SHOWS DEBRIS EXPANSION.
94327	EDER	MITCHELL	WHITE BURST AGAINST BLUE SKY EARLY, GREEN SKY LATER, PINK HALO APPEARS AROUND DEBRIS RING.
94328	EDER	MITCHELL	GREEN OVERALL EXPOSURE INITIALLY FOLLOWED BY HORSESHOE-SHAPED DEBRIS RING ALONG FIELD LINES.
94329	XR	B AND H	ABOUT THIRTY FRAMES SHOWING DEBRIS.
94332	TXA	KC-1	GOOD IMAGES OF LATE DEBRIS.
94334	EDER	ROBOT	BEAUTIFUL 12-FRAME RECORD OF FORMATION OF HORSE-SHOE CLOUD.
94335	IRA	DYNAFAX	VERY MUCH UNDEREXPOSED.
94336	IRA	DYNAFAX	EXCELLENT RECORD OF EARLY DEBRIS.

TABLE 5.8 SUMMARY OF BLUE GILL TRIPLE PRIME FILM RECORDS, AIRCRAFT 53120

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
95103	XR	RAPATRONIC	FIREBALL RECORD OBTAINED.
95104	XR	KFC-600	GOOD SEQUENCE OBTAINED.
95109	DXN	CLOUD	GOOD LATE-STAGE CLOUD RECORD.
95110	EDER	CLOUD	NO RECORD.
95111	RXP	ROBOT	69 FEET OF RECORD
95112	RXP	ROBOT	18 FEET OF RECORD.
95113	RXP	ROBOT	40 FEET OF RECORD.
95114	EDER	ROBOT	INITIAL BLUE GLOW FOR THIRTY-TWO FRAMES, YELLOW-WHITE CLOUD RISES INTO FIELD AND PERSISTS TWENTY-EIGHT FRAMES UNTIL AIRCRAFT BANKS.
95115	RXP	ROBOT	4 FEET OF RECORD.
95116	RXP	ROBOT	NO RECORD.
95117	PX	TRAID	BURST APPEARS AT BOTTOM OF FRAME AND RISES.
95118	KDII	TRAID	SIMILAR TO SEQUENCE IN 95117.
95119	EDER	TRAID	366 FEET OF RECORD. TURBULENT CLOUD APPEARS AT +11 SECONDS AND DEVELOPS INTO TOROID. BLUE GLOW ALWAYS PRESENT. AURORA OBSERVED.
95120	XR	TRAID	360 FEET OF GOOD RECORD.
95121	EDER	MAURER	NO RECORD.
95122	XR	MAURER	NO RECORD.
95123	KDI	FAIRCHILD HS-100	GOOD RECORD.
95124	KDII	GSAP	GOOD RECORD TO END OF FILM.
95125	XR	PS-4C	EXCELLENT RECORD 540 FEET. FIRST FRAME HALO. MANY SHOCK WAVES. GOOD INTERNAL FIREBALL DETAIL.
95127	EDER	PS-10B	FIREBALL DETAIL STARTS AT 0.1 SECOND. GOOD RECORD TO 1 SECOND.

TABLE 5.9 SUMMARY OF BLUE GILL TRIPLE PRIME FILM RECORDS, AIRCRAFT 60376

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
95203	XR	RAPATRONIC	RECORD OBTAINED SHOWING CENTRAL CORE AND HALO.
95204	XR	RAPATRONIC	RECORD OBTAINED SHOWING CENTRAL CORE AND HALO.
95205	XR	RAPATRONIC	RECORD OBTAINED SHOWING CENTRAL CORE PLUS TWO OUTER CONCENTRIC RINGS.
95209	EDER	BC	BURNHOLE ON FIRST FRAME. RECORD EXTENDS TO LATE TIME GLOW. LONG EXPOSURE TIMES SHOW IMAGE BLUR.
95210	XR	BC	RECORD FOR ENTIRE RUN. SHOWS FIREBALL GROWTH AND RISE PLUS TORUS DEVELOPMENT.
95211	RXP	FR PULSED	200 FEET OF RECORD.
95212	RXP	FR PULSED	RECORD OBTAINED.
95213	RXP	FR PULSED	46 FEET OF USEFUL RECORD.
95214	RXP	FR PULSED	RECORD SIMILAR TO OTHER FLIGHT RESEARCH RECORDS.
95215	RXP	FR PULSED	48 FEET OF RECORD.
95217	KDII	FR CINE	SUPERB RECORD OF FIREBALL, DEBRIS CLOUD DEVELOPMENT, VORTEX FORMATION, AND BLUE AURORA.
95218	XR	FR CINE	EXCELLENT RECORD 380 FEET. BURNHOLE ON FIRST FRAME.
95219	EDER	FR CINE	VERY LONG RECORD. AURORA FIRST SHOWS AT +5.6 SECONDS.
95220	PX	FR CINE	144 FEET OF RECORD BEAUTIFULLY SHOWING CLOUD RISE, EXPANSION, AND AURORA OUT OF TOP OF CLOUD.
95221	EDER	BC	BURNHOLE FIRST FRAME. GOOD AURORA COLOR. SHOWS COLOR DIFFERENCE BETWEEN AURORA AND OUTER FIRE BALL.
95222	PX	BC	DENSE EXPOSURE OF FIREBALL AND AURORA.
95223	XR	RAPATRONIC	RECORD SHOWS CENTRAL CORE PLUS OUTER HALO.
95225	PX	PS-4C	FIREBALL SURROUNDING STRUCTURED DEBRIS CLOUD OBSERVED. FIREBALL DIES, LEAVING DEBRIS.
95226	EDER	PS-4C	LONG, PERSISTENT RECORD OF CENTRAL CORE. SHOWS EARLY FIREBALL DISSIPATION. SMALL IMAGE.
95227	PX	PS-10B	EXCELLENT RECORD SHOWING FIREBALL, DEBRIS, AND VARIOUS SHOCKS.

TABLE 5.10 SUMMARY OF BLUE GILL TRIPLE PRIME FILM RECORDS, JOHNSTON ISLAND

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
95303	XR	RAPATRONIC	CENTRAL CORE.
95304(1-6)	XR	KFC-600	RECORD ON ALL FRAMES EXCEPT NO. 2.
95309	EDER	CLOUD	OVEREXPOSED FOR FIRST 30 SECONDS. GOOD LATE CLOUD TO 2 MINUTES.
95310	EDER	CLOUD	NOT IN VIEW FOR FIRST 30 SECONDS. EXCELLENT AURORA FROM 1 TO 12 MINUTES.
95311	RXP	ROBOT	18 FEET OF RECORD SHOWING BURST AND AURORA. 4278 A FILTER.
95312	RXP	ROBOT	NO RECORD EXCEPT ROCKET TRAILS. 4709 A FILTER.
95313	RXP	ROBOT	APPROXIMATELY 55 FEET OF RECORD FIREBALL, DEBRIS, AURORA, AND TOROIDAL DEVELOPMENT. 5228 A FILTER.
95314	RXP	ROBOT	GOOD RECORD. BURST GROWS INTO FIELD OF VIEW FROM LEFT SIDE OF FRAME. 6300 A FILTER.
95315	RXP	ROBOT	28 FEET OF RECORD SHOWING AURORA PLUS FAINT TOROID. 3914 A FILTER.
95317	PX	TRAID	RECORD OBTAINED, ALBEIT SMALL IN SIZE.
95318	XR	TRAID	GOOD RECORD, BUT BURST IS LOW IN FRAME. SHOWS MANY SHOCK WAVES.
95319	XR	MAURER	FOGGED FILM.
95320	EDER	MAURER	GOOD RECORD FOR 17 SECONDS. SHOWS INTERNAL FIREBALL STRUCTURE.
95321	KD-I	FAIRCHILD HS-100	EARLY FIREBALL RECORD.
95322	KDII	GSAP	GOOD RECORD OF LATE FIREBALL AND VORTEX RINGS.
95323	PX	PS-4C	94 FEET OF RECORD. PARTICULARLY GOOD FIRST FRAME
95324	EDER	PS-4C	21 FEET OF RECORD SHOWING VARIOUS SHOCKS.
95325	PX	PS-10B	GOOD RECORD SHOWING FIREBALL EXPANSION.
95326	PX	MITCHELL	SHOWS EARLY FIREBALL GROWTH.
95327	KDII	MITCHELL	LIKE 95326 EXCEPT IN COLOR.
95328	EDER	MITCHELL	LONG RECORD. BURST OVEREXPOSED EARLY. AURORA AND YELLOW-GREEN CLOUD SEEN LATER.
95329	XR	B AND H	GOOD RECORD. SHUTTER OUT OF SYNCH CAUSES IMAGE TAILING.
95332	TXA	KC-1	5 GOOD LATE CLOUD PICTURES.
95334	EDER	ROBOT	42 FEET OF RECORD SHOWING BURST, WHITE TOROID, AND AURORA. CLOUD FILLS FIELD.
95335	MF	DYNAFAX	NO RECORD.
95336	HSIR	DYNAFAX	RECORD BUT OVEREXPOSED. POSSIBLE CAPPING SHUTTER LIGHT LEAK.

TABLE 6.7 SUMMARY OF KING FISH FILM RECORDS, AIRCRAFT 53120

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
96103	XR	RAPATRONIC	GOOD RECORD OF X-RAY FIREBALL.
96104	XR	KFC-600	EXCELLENT SERIES OF PICTURES.
96109	DXN	CLOUD	BEAUTIFUL SERIES OF TWENTY-EIGHT FRAMES SHOWING RAPID FIREBALL RISE AND AURORA.
96110	EDER	CLOUD	NO RECORD.
96111	RXP	ROBOT	ABOUT 10 FEET OF GOOD RECORD SHOWING DEBRIS EXPANSION AND SHOCKS. INITIAL FRAMES OVER-EXPOSED.
96112	EDER	ROBOT	BEAUTIFUL RECORD SHOWING RAPID RISE AND GROWTH OF BURST, AS WELL AS RED SHOCK AND AURORA WHOSE ORIGIN REMAINS FIXED.
96113	RXP	ROBOT	ABOUT 10 FEET OF GOOD RECORD SHOWING SHOCKS, SOME AURORA, AND DEBRIS EXPANSION.
96114	EDER	ROBOT	BURST OCCURS INITIALLY OUT OF FIELD OF VIEW BUT LATER GROWS IN. RED SHOCK OBSERVED.
96115	RXP	ROBOT	BURST INITIALLY OUT OF THE FRAME, THEN RISES TO FILL IT. SEVERAL FEET OF GOOD RECORD.
96116	RXP	ROBOT	BURST INITIALLY OUT OF THE FRAME, THEN RISES TO FILL IT. THERE ARE SEVERAL FEET OF GOOD RECORD.
96117	PX	TRAID	25 FEET OF RECORD SHOWING FIREBALL, AURORA, AND REMAINING DEBRIS.
96118	KDII	TRAID	13 FEET OF RECORD SHOWING OUTER RED SHELL, AURORA AND BLUISH-WHITE DEBRIS REMAINING AFTER FIREBALL DISSIPATION.
96119	EDER	TRAID	BURST INITIALLY OUTSIDE FIELD OF VIEW. BURST AND AURORA RISE INTO VIEW, AURORA REMAINS FIXED WHILE FIREBALL CONTINUES TO RISE.
96120	XR	TRAID	SEVERAL FEET OF GOOD RECORD SHOWING DEBRIS AND AURORA. INITIALLY OUT OF FRAME THEN RISING TO FILL IT.
96121	EDER	MAURER	ABOUT 3 FEET OF RECORD SHOWING FIREBALL AND DEBRIS.
96122	DXN	MAURER	GOOD RECORD OF ASYMMETRIES IN FIREBALL SHAPE.
96123	KD I	FAIRCHILD HS-100	GOOD RECORD OF INITIAL FIREBALL.
96124	KDII	GSAP	GOOD FIREBALL RECORD.
96125	XR	PS-4C	BEAUTIFUL RECORD OF FIREBALL AND DEBRIS. NO AURORA.
96127	PX	PS-10B	FIREBALL ASYMMETRIES AND DEBRIS JETTING OBSERVED.

TABLE 6.8 SUMMARY OF KING FISH FILM RECORDS, AIRCRAFT 60376

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
96203	XR	RAPATRONIC	GOOD RECORD OF X-RAY FIREBALL.
96204	XR	RAPATRONIC	GOOD RECORD OF X-RAY FIREBALL.
96205	XR	RAPATRONIC	GOOD RECORD OF X-RAY FIREBALL.
96209	EDER	BC	ABOUT 7 GOOD PICTURES IN THE CORNER OF THE FRAME. THESE SHOW THE FIREBALL AND DEBRIS.
96210	DXN	BC	ABOUT 30 PICTURES OF X-RAY FIREBALL AND RISING DEBRIS CLOUD NEAR BOTTOM FRAME EDGE.
96211	EDER	FR PULSED	FIREBALL GROWS INTO FRAME FROM BELOW.
96212	RXP	FR PULSED	SHORT BUT FAIR RECORD. INITIALLY OUT OF FRAME BUT RISES TO FILL THE FIELD OF VIEW.
96213	EDER	FR PULSED	NO RECORD.
96214	RXP	FR PULSED	NO RECORD.
96215	RXP	FR PULSED	NO RECORD.
96217	KDII	FR CINE	OVER 35 FEET OF RECORD. BURST IS INITIALLY BELOW FIELD OF VIEW BUT LATER GROWS IN. DEBRIS APPEARS BLUE.
96218	XR	FR CINE	SEVERAL FEET OF EXCELLENT RECORD SHOWING AURORA AND DEBRIS.
96219	EDER	FR CINE	SEVERAL FEET OF RECORD SHOWING X-RAY FIREBALL, EXPANDING DEBRIS, AND RED SHOCK.
96220	PX	FR CINE	NO RECORD.
96221	EDER	BC	ABOUT 30 GOOD PICTURES STARTING IN THE CENTER OF THE FRAME, THEN RISING OUT OF IT. GOOD AURORA PICTURES.
96222	PX	BC	EXCELLENT SERIES OF PICTURES SHOWING FIREBALL RISE AND AURORAL DISTORTION.
96223	XR	RAPATRONIC	GOOD RECORD OF X-RAY FIREBALL AND DEBRIS.
96225	PX	PS-4C	79 FEET OF RECORD SHOWING ASYMMETRICAL SHAPE OF X-RAY FIREBALL AS WELL AS DEBRIS JETTING.
96226	EDER	PS-4C	OVER 350 FEET OF GOOD RECORD. PERSISTENT CENTRAL DEBRIS CORE.
96227	EDER	PS-10B	SEVERAL FEET OF GOOD RECORD SHOWING THE INITIAL FIREBALL WHICH FADES TO DEBRIS AND THEN TO A CENTRAL SPOT.

TABLE 6.9 SUMMARY OF KING FISH FILM RECORDS, JOHNSTON ISLAND

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
96303	XR	RAPATRONIC	GOOD RECORD OF X-RAY FIREBALL AND DEBRIS.
96304	XR	KFC-600	EXCELLENT SERIES OF PICTURES SHOWING X-RAY DEPOSITION AND DEBRIS.
96309	EDER	CLOUD	ABOUT 3 FEET OF GOOD RECORD SHOWING THE FIREBALL, AURORA, AND THEN DEBRIS.
96310	EDER	CLOUD	ABOUT 2 FOOT OF RECORD SHOWING THE FIREBALL, AURORA, AND THEN DEBRIS.
96311	RXP	ROBOT	SIMILAR TO COLOR ROBOT RECORDS. STRONG AURORA. FIREBALL RISE AND GROWTH WELL OBSERVED. 4278A FILTER.
96312	EDER	ROBOT	SEQUENCE SIMILAR TO 96313.
96313	EDER	ROBOT	SEVERAL GOOD PICTURES SHOWING X-RAY FIREBALL, AURORA, AND DEBRIS.
96314	RXP	ROBOT	SEVERAL GOOD PICTURES SHOWING X-RAY FIREBALL, AURORA, AND DEBRIS.
96315	RXP	ROBOT	FIVE FRAMES, ONLY SHOW INITIAL AURORA. 3914A FILTER.
96317	PX	TRAID	19 FEET OF RECORD SIMILAR TO 96326.
96318	XR	TRAID	SEVERAL FEET OF EXCELLENT RECORD SHOWING FIREBALL AND DEBRIS.
96319	XR	MAURER	FEW FEET OF GOOD RECORD SHOWING FIREBALL, SHOCK, AND EXPANDING DEBRIS.
96320	EDER	MAURER	FOURTEEN FRAMES SHOWING THE INITIAL FIREBALL, EXPANDING DEBRIS, AND A SHOCK.
96321	KD I	FAIRCHILD HS-100	SEVERAL FEET OF EXCELLENT RECORD SHOWING THE INITIAL DETONATION, FADING FIREBALL, EXPANDING DEBRIS, AND A FINAL REMAINING CENTRAL CORE.
96322	EDER	GSAP	A FEW FEET OF BEAUTIFUL RECORD CENTERED ON THE FRAME SHOWING THE FIREBALL AND DEBRIS.
96323	PX	PS-4C	325 FEET OF RECORD SHOWING FIREBALL EXPANSION AND DEBRIS JETTING.
96324	EDER	PS-4C	43 FEET OF RECORD. BURST CENTERED IN FRAME.
96325	PX	PS-10B	SEVERAL FEET OF GOOD RECORD SHOWING THE INITIAL FIREBALL, DEBRIS EXPANSION WHICH THEN FADES TO A CENTRAL CORE. THE CENTRAL CORE THEN EXPANDS AND FADES.
96326	PX	MITCHELL	18 FEET OF RECORD SHOWING DEBRIS, MAIN FIREBALL, OUTER SHELL, AND DEBRIS JETTING.
96327	KDII	MITCHELL	A FEW FEET OF GOOD RECORD SHOWING THE FIREBALL AND DEBRIS.
96328	EDER	MITCHELL	10 FEET OF EXCELLENT RECORD STRONG AURORA.
96329	XR	B AND H	SEVERAL FEET OF EXCELLENT RECORD SHOWING THE FIREBALL, DEBRIS, AND AURORA.
96332	TXA	KC-1B	SEVERAL GOOD RECORDS SHOWING FIREBALL, AURORA, AND DEBRIS.
96334	EDER	ROBOT	SEQUENCE SIMILAR TO 96312 AND 96313.
96335	MF	DYNAFAX	NO RECORD.
96336	HSIP	DYNAFAX	SMALL FAINT RECORD.

TABLE 7.6 SUMMARY OF TIGHT ROPE FILM RECORDS, AIRCRAFT 53120

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
97103	XR	RAPATRONIC	NO RECORD.
97104	XR	KFC-600	NO RECORD.
97109	DXN	CLOUD	BURST OCCURS OUTSIDE FIELD. AT LATER TIMES, TORUS SHOWS AT BOTTOM OF FRAME.
97110	EDER	CLOUD	NO RECORD.
97111	RXP	ROBOT	SEVEN FRAMES RECORDED.
97112	RXP	ROBOT	INITIAL FLASH DISSIPATES AFTER EIGHT FRAMES.
97113	RXP	ROBOT	INITIAL FLASH DISSIPATES AFTER TWELVE FRAMES.
97114	EDER	ROBOT	NO RECORD.
97115	RXP	ROBOT	INITIAL FLASH DISSIPATES AFTER FIVE FRAMES.
97116	RXP	ROBOT	INITIAL FLASH DISSIPATES AFTER EIGHT FRAMES.
97117	PX	TRAID	61 FEET OF RECORD. BURST IN LOWER RIGHT CORNER. TOROID FORMS AND SMALL VORTEX RING OBSERVED.
97118	EDER	TRAID	SMALL IMAGE, OVEREXPOSED INITIALLY. SHOWS FORMATION OF TORUS.
97119	EDER	TRAID	NO RECORD.
97120	XR	TRAID	POOR RECORD.
97121	EDER	MAURER	FIRST TWO FRAMES SHOW JOHNSTON ISLAND ILLUMINATED BY BURST.
97122	DXN	MAURER	LONG RECORD. BURST OCCURS IN LOWER RIGHT CORNER. SOME GROWTH AND TORUS FORMATION OBSERVED.
97123	KDI	FAIRCHILD HS-100	VERY SMALL IMAGE.
97124	KDII	GSAP	VERY SMALL IMAGE.
97125	XR	PS-4C	NO RECORD.
97127	EDER	PS-10B	NO RECORD.

TABLE 7.7 SUMMARY OF TIGHT ROPE FILM RECORDS, AIRCRAFT 60376

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
97203	XR	RAPATRONIC	NO RECORD.
97204	XR	RAPATRONIC	NO RECORD.
97205	XR	RAPATRONIC	NO RECORD.
97209	EDER	BC	ONLY A FEW FRAMES SHOWING TORUS. BLURRED BY AIRCRAFT MOTION.
97210	DXN	BC	RECORD NOT VERY USEFUL. ONLY A FEW FRAMES SHOW TORUS.
97211	RXP	FR-PULSED	SMALL IMAGE. TORUS AND VORTEX RING FORMATION OBSERVED.
97212	RXP	FR-PULSED	BURST OCCURRED OUTSIDE FIELD. TORUS, AND LATER, CLOUD OBSERVED.
97213	RXP	FR-PULSED	NO USEFUL RECORD.
97214	RXP	FR-PULSED	NO USEFUL RECORD.
97215	RXP	FR-PULSED	NO USEFUL RECORD.
97217	EDER	FR-CINE	FAIR RECORD SHOWING TORUS, OVER-EXPOSED ON EARLY FRAMES.
97218	XR	FR-CINE	GOOD RECORD FOR 100 SECONDS.SHOWS TORUS FORMATION AND GROWTH.
97219	EDER	FR-CINE	POOR RECORD, SMALL IMAGE. BLURRED DUE TO AIRCRAFT MOTION. 50 FRAMES.
97220	PX	FR-CINE	NO RECORD.
97221	EDER	BC	POOR RECORD, ABOUT 24 FRAMES. INITIAL FRAMES OVER EXPOSED.
97222	DXN	BC	TWELVE FRAMES OF TORUS DEVELOPMENT.
97223	XR	RAPATRONIC	NO RECORD.
97225	PX	PS-4C	500 FEET OF RECORD. BURST AT BOTTOM OF FRAME. CENTRAL CORE AND DEBRIS OBSERVED THROUGH EXPANDING TRANSPARENT FIREBALL.
97226	EDER	PS-4C	NO RECORD.
97227	PX	PS-10B	FIREBALL GROWTH AND DEBRIS.

TABLE 7.8 SUMMARY OF TIGHT ROPE FILM RECORDS, JOHNSTON ISLAND

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
97303	XR	RAPATRONIC	GOOD FIREBALL RECORD.
97304	XR	KFC-600	EXCELLENT SEQUENCE OF PICTURES.
97309	EDER	CLOUD	SEVERAL GOOD LATE-TIME PICTURES SHOWING TORUS GROWTH.
97310	DXN	CLOUD	GROWTH OF TORUS OBSERVED. FIRST FRAMES OVER-EXPOSED.
97311	RXP	ROBOT	TWENTY-FIVE FRAMES SHOWING TOROID GROWTH AND BREAK-UP. 4278 A FILTER.
97312	RXP	ROBOT	EIGHT FRAMES SHOWING GROWTH OF VORTEX RING. 4709 A FILTER.
97313	RXP	ROBOT	TWELVE FRAMES SHOWING GROWTH OF VORTEX RING. 5228 A FILTER.
97314	RXP	ROBOT	TEN FRAMES SHOWING TORUS GROWTH. 6300 A FILTER.
97315	RXP	ROBOT	THIRTY-SIX FRAMES SHOWING GROWTH OF TORUS. 3914 A FILTER.
97317	PX	TRAID	90 FEET OF RECORD SHOWING FIREBALL GROWTH, BREAKUP, AND TOROID DEVELOPMENT.
97318	XR	TRAID	EXCELLENT RECORD SHOWING TORUS FORMATION AND GROWTH. OVEREXPOSED INITIALLY.
97319	DXN	MAURER	118 FRAMES SHOWING GROWTH OF FIREBALL AND TORUS.
97320	EDER	MAURER	GOOD RECORD SHOWING TORUS.
97321	KD I	FAIRCHILD HS-100	VERY SMALL FIREBALL IMAGE.
97322	KDII	GSAP	GOOD LATE-TIME RECORD. OVEREXPOSED INITIALLY.
97323	XR	PS-4C	EXCELLENT RECORD.
97324	EDER	PS-4C	EXCELLENT RECORD.
97325	PX	PS-108	EXCELLENT RECORD OF FIREBALL GROWTH.
97326	PX	MITCHELL	230 FEET OF RECORD SHOWING FIREBALL TRANSPARENCY, DEBRIS, AND TOROID FORMATION.
97327	KDII	MITCHELL	17 FEET OF RECORD SHOWING FIREBALL SHOCK, DEBRIS, DEBRIS SHOCK, AND HOT CENTRAL CORE.
97328	EDER	MITCHELL	FAIR RECORD SHOWING TORUS AFTER FORMATION, OVEREXPOSED ON EARLIER FRAMES.
97329	EDER	B AND H	EARLY TIME FRAMES OVEREXPOSED. LATE TIMES SHOW TORUS GROWTH. SMALL IMAGE.
97332	TXA	KC-1	POOR IMAGES. BLURRED DUE TO FILM MOTION DURING EXPOSURE TIME.
97334	EDER	ROBOT	NO RECORD.
97335	MF	DYNAFAX	NO RECORD.
97336	MF	DYNAFAX	WEAK EXPOSURE. SMALL BUT GOOD IMAGE.

TABLE 8.5 SUMMARY OF STAR FISH PRIME FILM RECORDS, SAMOA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
93401	TXA	KC-1	TWO EXPOSURES. BOTH VAGUELY SHOW AURORAL STREAMERS.
93402	TXA	KC-1	THREE AURORAL EXPOSURES, SIMILAR TO 93401.
93403	RXP	ROBOT	SINGLE EXPOSURE. 3914A FILTER.
93404	RXP	ROBOT	SINGLE EXPOSURE. NO USEFUL DATA. 4278A FILTER.
93405	RXP	ROBOT	FIVE EXPOSURES. NO FILTER. DIFFUSE ARC IMAGE IN ONE FRAME.
93406	RXP	ROBOT	SINGLE EXPOSURE ONLY.
93407	RXP	ROBOT	TWO EXPOSURES, EACH OF DIFFERENT AREAS. SECOND EXPOSURE SHOWS AURORAL FINGERS FROM SOUTH 5577A FILTER.
93408	RXP	ROBOT	THREE EXPOSURES. TWO SHOW AURORAL STREAMERS. 6300A FILTER.
93409	RXP	MITCHELL	DATA RECORD FOR OVER 100 FEET OF FILM. INITIAL EXPANSION OF ARC VISIBLE. A DEFINITE MINIMUM IN INTENSITY OCCURS.
93410	EDER	B AND H	GOOD RECORD SHOWING COLOR VARIATION.
93411	RXP	B AND H	RECORDED DATA FOR ABOUT 20 FEET. SHOWS SKY BRIGHTENING.
93412	EDER	B AND H	GOOD COLOR DEVELOPMENT OF AURORAL ARC VISIBLE. SHOWS 5 SEC MINIMUM IN OVERALL BRIGHTNESS.
93413	DXN	CLOUD	TWENTY SIX EXPOSURES SHOWING BRIGHTENING OF NW SKY.
93414	EDER	CLOUD	FOUR TO FIVE EXPOSURES SHOWING SKY BRIGHTENING.
93415	RXP	TRAID	RECORDED DATA FOR 75 FEET. IMAGES GOOD.
93416	RXP	TRAID	RECORDED DATA FOR 75 FEET AS ABOVE. NO PRIMARY DATA.
93418	RXP	ROBOT	NINE EXPOSURES. AURORAL STREAMERS CAN BE SEEN IN SOME EXPOSURES.
93420	TX	GSAP	NO SIGNIFICANT RECORD.
93421	TX	GSAP	GOOD RECORD OF AURORAL ARC AND EXPANSION.
93422	TX	GSAP	GOOD RECORD OF AURORAL ARC AND EXPANSION.
93423	RXP	YASHICA	TWO EXPOSURES. NO PERTINENT INFORMATION.
93424	EDER	YASHICA	TWO EXPOSURES. SHOWS SKY COLORATION.
93425	MAG TAPE	MOCK SPECTRO-GRAPH	NOT REDUCED.

TABLE 8.6 SUMMARY OF STAR FISH PRIME FILM RECORDS, FIJI

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
93501	TXR	GSAP	SHOWS DEVELOPING SOURCE WITH TIME, BUT CLOUDS PREVENT DISTINCT IMAGES.
93502	TXR	GSAP	NO RECORD.
93503	RXP	HASSELBLAD	THREE EXPOSURES. CLOUDS OBSCURE ANY IMAGES.
93504	EDER	YASHICA	FOUR EXPOSURES. CLOUD OBSCURATION AS ABOVE.

TABLE 8.7 SUMMARY OF STAR FISH PRIME FILM RECORDS, TONGA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
93601	TXR	GSAP	SHOWS EXTENSIVE AURORAL BRIGHTENING. NO DISTINCT AURORAL ARCS.
93603	EDER	HASSELBLAD	TWO EXPOSURES. FIRST SHOWS AURORAL STREAMERS. SECOND SOMEWHAT WEAKER.
93606	RXP	YASHICA	TWO EXPOSURES. BOTH SHOW AURORAL STREAMERS. FIRST HAS LONGER EXPOSURE AND HAS GOOD IMAGE DEFINITION.

TABLE 8.8 SUMMARY OF STAR FISH PRIME FILM RECORDS, MAUNA LOA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
93701	EDER	MITCHELL	EXCELLENT RECORD SHOWING ASYMMETRICAL DEBRIS EXPANSION. ABOUT 36 FEET.
93702	EDER	CLOUD	ABOUT TEN FRAMES OF RECORD SHOWING LATE-TIME SKY.
93703	KDII	GSAP	ONE USABLE FRAME, SEVERAL POOR FRAMES.
93704	KDII	GSAP	TWELVE USABLE FRAMES. FIRST FRAME SHOWS BRIGHT FIREBALL, AND 50 FAIR FRAMES NEAR BEGINNING SHOW DEBRIS EXPANSION.
93706	EDER	EXACTA	NO RECORD.
93707	EDER	ROBOT	TWELVE USABLE FRAMES. WHITE AURORAL STREAMERS OBSERVED FROM DOME-LIKE BURST. TWO FRAMES SHOW LATE TIME-SKY AND AURORA.
93709	TX	MINOLTA	NO RECORD.

TABLE 8.20 SUMMARY OF CHECK MATE FILM RECORDS, SAMOA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
94410	TXA	KC-1	NO RECORD.
94411	TXA	KC-1	NO RECORD.
94420	EDER	B AND H	NO RECORD.
94421	EDER	GSAP	NO RECORD.
94422	EDER	GSAP	NO RECORD.
94423	EDER	B AND H	NO RECORD.
94424	EDER	BC	NO RECORD.
94425	EDER	FR-PULSED	NO RECORD.
94430	EDER	TRAID	NO RECORD.
94431	EDER	TRAID	NO RECORD.
94432	EDER	CLOUD	ONE GOOD FRAME OF DATA.
94433	EDER	CLOUD	TWO WEAK FRAMES OF DATA.
94434	EDER	FAIRCHILD HS-100	NO RECORD.
94435	EDER	FAIRCHILD HS-100	NO RECORD.
94440	RXP	MITCHELL	NO RECORD.
94441	EDER	GSAP	NO RECORD.
94442	EDER	GSAP	NO RECORD.
94443	EDER	B AND H	NO RECORD.
94444	EDER	FR-PULSED	NO RECORD.
94445	EDER	BC	APPROXIMATELY 10 FRAMES OF FAINT RECORD.
94451	RXP	ROBOT	NO RECORD. 3914A FILTER
94452	RXP	ROBOT	NO RECORD. 4278A FILTER.
94453	RXP	ROBOT	FAINT IMAGE 4709A FILTER.
94454	RXP	ROBOT	ONE IMAGE. 5577A FILTER.
94455	RXP	ROBOT	NO RECORD. 6300 A FILTER.
94456	EDER	ROBOT	ONE FAIR DATA FRAME.
94461	MAG TAPE	MOCK	NOT REDUCED.
94462	EDER	YASHICA	NO RECORD.
94471	IF	HUET	NO RECORD.
94472	EDER	YASHICA	ONE FAINT RED IMAGE.
94481	EDER	YASHICA	ONE FAINT RED IMAGE. USABLE DATA. STAR TRACKS.
94482	EDER	YASHICA	ONE FAINT RED IMAGE. USABLE DATA. STAR TRACKS.

TABLE 8.21 SUMMARY OF CHECK MATE FILM RECORDS, FIJI

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
94501	EDER	GSAP	NO RECORD
94502	EDER	GSAP	NO RECORD.
94503	EDER	FR-PULSED	NO RECORD.
94504	EDER	ROBOT	NO RECORD.
94505	EDER	YASHICA	NO RECORD.
94506	EDER	YASHICA	NO RECORD.
94507	EDER	HASSELBLAD	NO RECORD.

TABLE 8.22 SUMMARY OF CHECK MATE FILM RECORDS, TONGA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
94601	EDER	GSAP	NO RECORD.
94602	EDER	GSAP	NO RECORD.
94603	EDER	FR-PULSED	NO RECORD.
94604	EDER	ROBOT	NO RECORD.
94605	EDER	YASHICA	NO RECORD.
94606	EDER	YASHICA	NO RECORD.
94607	EDER	HASSELBLAD	NO RECORD.

TABLE 8.23 SUMMARY OF CHECK MATE FILM RECORDS, MAUNA LOA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
94701	EDER	MITCHELL	NO RECORD.
94702	EDER	CLOUD	NO RECORD.
94703-A	EDER	GSAP	NO RECORD.
94703-B	EDER	GSAP	NO RECORD.
94704	KDII	GSAP	NO RECORD.
94705	HSIR	GSAP	ONLY ONE FRAME WHICH SHOWS INITIAL FLASH.
94706	EDER	EXACTA	FIVE FRAMES SIMILAR TO 94709.
94707	EDER	ROBOT	BEAUTIFUL SEQUENCE OF AURORA COMING OVER HORIZON, HEADING SOUTH. SIXTEEN TO TWENTY FRAMES.
94708	EDER	LEICA	SEVEN VERY GOOD FRAMES OF DEBRIS AURORA.
94709	EDER	MINOLTA	EIGHT VERY GOOD AURORAL PICTURES, SEVERAL SHOWING LONG FIELD LINE ILLUMINATION.
94710	EDER	BC	NO RECORD.
94711	EDER	BC	NO RECORD.
94712	EDER	FR-PULSED	NO RECORD.
94713	EDER	FR-PULSED	NO RECORD.
94717	XR	GRAPHIC	FAINT IMAGE OF AURORA ON FRAMES 3, 4.
94718	XR	ROBOT	NO RECORD.

TABLE 8.32 SUMMARY OF BLUE GILL TRIPLE PRIME FILM RECORDS, SAMOA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
95410	TX	KC-1	RECORD CONTAINS APPROXIMATELY 40 FRAMES OF AURORAL IMAGES.
95411	TX	KC-1	RECORD CONTAINS APPROXIMATELY 20 FRAMES OF AURORAL IMAGES.
95420	EDER	B AND H	NO RECORD.
95421	EDER	GSAP	NO RECORD.
95422	EDER	GSAP	NO RECORD.
95423	EDER	B AND H	SEVERAL FEET OF VERY FAINT RECORD.
95424	EDER	BC	ONE FRAME, PARTIAL RECORD.
95425	EDER	FR-PULSED	NO RECORD.
95430	EDER	TRAID	NO RECORD.
95431	EDER	TRAID	NO RECORD.
95432	EDER	CLOUD	RECORD SHOWS 15 EXPOSURES. IMAGE PARTIALLY OFF FRAME.
95433	EDER	CLOUD	RECORD SHOWS 30 EXPOSURES, VERY GOOD AURORA IMAGES.
95434	EDER	FAIRCHILD HS-100	NO RECORD.
95435	EDER	FAIRCHILD HS-100	NO RECORD.
95440	RXP	MITCHELL	NO RECORD.
95441	EDER	GSAP	NO RECORD.
95442	EDER	GSAP	NO RECORD.
95443	EDER	B AND H	NO RECORD.
95444	EDER	FR-PULSED	VERY WELL DEFINED IMAGES OF EXPANDING PINKISH BLUE, AURORAL ARC EVIDENT FOR FIFTY FRAMES.
95445	EDER	BC	RECORD PARTIALLY OFF FRAME. VERY GOOD IMAGES OF AURORA.
95451	RXP	ROBOT	TWO GOOD IMAGES OF AURORAL ARC. 3914 A FILTER.
95452	RXP	ROBOT	NO RECORD. 4278 A FILTER.
95453	RXP	ROBOT	THREE GOOD IMAGES OF AURORAL ARC. 4709 A FILTER
95454	RXP	ROBOT	FOUR GOOD IMAGES OF AURORAL ARC. 5577 A FILTER.
95455	RXP	ROBOT	TWO IMAGES OF AURORAL ARC. INTENSITY WEAK. 6300 A FILTER.
95456	EDER	ROBOT	FIVE VERY GOOD IMAGES OF AURORAL ARC GROUPS.
95461	MAG TAPE	MOCK	NOT REDUCED.
95462	IF	HUET	GOOD SPECTRUM ON 3 EXPOSURES.
95462	EDER	YASHICA	SEVEN GOOD IMAGES OF AURORAL ARCS.
95472	EDER	YASHICA	FIVE GOOD IMAGES OF AURORAL ARCS.
95481	EDER	YASHICA	SIX VERY GOOD IMAGES OF AURORAL ARCS.
95482	EDER	YASHICA	EIGHT VERY GOOD IMAGES OF AURORAL ARCS.

TABLE 8.33 SUMMARY OF BLUE GILL TRIPLE PRIME FILM RECORDS, FIJI

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
95501	EDER	GSAP	NO RECORD.
95502	EDER	GSAP	NO RECORD.
95503	EDER	FR-PULSED	NO RECORD.
95504	EDER	ROBOT	NO RECORD.
95505	EDER	YASHICA	NO RECORD.
95506	EDER	YASHICA	NO RECORD.
95507	EDER	HASSELBLAD	NO RECORD.

TABLE 8.34 SUMMARY OF BLUE GILL TRIPLE PRIME FILM RECORDS, TONGA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
95601	EDER	GSAP	NO RECORD.
95602	EDER	GSAP	NO RECORD.
95603	EDER	FR-PULSED	NO RECORD.
95604	EDER	ROBOT	NO RECORD.
95605	EDER	YASHICA	SEVEN GOOD IMAGES OF AURORAL ARCS.
95606	EDER	YASHICA	TWO GOOD IMAGES OF AURORAL ARCS.
95607	EDER	HASSELBLAD	NO RECORD.

TABLE 8.35 SUMMARY OF BLUE GILL TRIPLE PRIME FILM RECORDS, MAUNA LOA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
95701	EDER	MITCHELL	NO RECORD.
95702	EDER	CLOUD	NO RECORD.
95703	KDII	GSAP	NO RECORD.
95704	KDII	GSAP	NO RECORD.
95705	HSIR	GSAP	NO RECORD.
95706	EDER	EXACTA	NO RECORD.
95707	EDER	ROBOT	NO RECORD.
95708	EDER	LEICA	NO RECORD.
95709	EDER	MINOLTA	NO RECORD.
95710	EDER	BC	NO RECORD.
95711	EDER	BC	NO RECORD.
95712	EDER	FR-PULSED	NO RECORD.
95713	EDER	FR-PULSED	NO RECORD.
95716	EDER	EXACTA	NO RECORD.
95717	XR	GRAPHIC	NO RECORD.
95718	EDER	ROBOT	NO RECORD.
95719	EDER	GSAP	NO RECORD.

TABLE 8.45 SUMMARY OF KING FISH FILM RECORDS, SAMOA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
96410	TXA	KC-1	NO RECORD.
96411	TXA	KC-1	NO RECORD.
96420	EDER	B AND H	NO RECORD.
96421	EDER	GSAP	NO RECORD.
96422	EDER	GSAP	NO RECORD.
96423	EDER	B AND H	NO RECORD.
96424	EDER	BC	NO RECORD.
96425	EDER	FR-PULSED	NO RECORD.
96430	EDER	TRAID	NO RECORD.
96431	EDER	TRAID	NO RECORD.
96432	EDER	CLOUD	NO RECORD.
96433	EDER	CLOUD	NO RECORD.
96434	EDER	FAIRCHILD HS-100	NO RECORD.
96435	EDER	FAIRCHILD HS-100	NO RECORD.
96440	EDER	MITCHELL	NO RECORD.
96441	EDER	GSAP	NO RECORD.
96442	EDER	GSAP	NO RECORD.
96443	EDER	B AND H	NO RECORD.
96444	EDER	FR-PULSED	NO RECORD.
96445	EDER	BC	NO RECORD.
96481	EDER	YASHICA	NO RECORD.
96482	EDER	YASHICA	NO RECORD.

TABLE 8.46 SUMMARY OF KING FISH FILM RECORDS, FIJI

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
96501	EDER	GSAP	NO RECORD.
96502	EDER	GSAP	NO RECORD.
96503	EDER	FR-PULSED	NO RECORD.
96504	EDER	ROBOT	NO RECORD.
96505	EDER	YASHICA	NO RECORD.
96506	EDER	YASHICA	NO RECORD.
96507	EDER	HASSELBLAD	NO RECORD.

TABLE 8.47 SUMMARY OF KING FISH FILM RECORDS, TONGA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
96601	EDER	GSAP	NO RECORD.
96602	EDER	GSAP	NO RECORD.
96604	EDER	ROBOT	NO RECORD.
96605	EDER	YASHICA	NO RECORD.
96606	EDER	YASHICA	NO RECORD.
96607	EDER	HASSELBLAD	NO RECORD.

TABLE 8.48 SUMMARY OF KING FISH FILM RECORDS, MAUNA LOA

FILM NUMBER	FILM TYPE	CAMERA	RESULTS
96701	EDER	MITCHELL	NO RECORD.
96702	EDER	CLOUD	7 FAIR FRAMES SHOWING SHOCK AND LATE TIME SKY.
96703	EDER	GSAP	NO RECORD.
96704	EDER	GSAP	NO RECORD.
96705	HSIR	GSAP	NO RECORD OF BURST. ONLY ONE OR TWO FRAMES OF INITIAL FLASH.
96706	EDER	EXACTA	SIX FAIR EXPOSURES SHOWING AURORA.
96707	EDER	ROBOT	NO RECORD.
96708	EDER	LEICA	NINE FAIR EXPOSURES SHOWING TOP OF FIREBALL AND AURORA AT LATE TIMES.
96709	EDER	MINOLTA	ABOUT TWO FEET OF MODERATELY GOOD RECORD SHOWING AURORA.
96710	EDER	BC	NO RECORD.
96711	EDER	BC	NO RECORD.
96712	EDER	FR-PULSED	SHOWS AURORA, RED SHOCK, AND BURST RISING ABOVE HORIZON. ABOUT 30 FRAMES.
96713	EDER	FR-PULSED	SEQUENCE SHOWING BURST RISE INTO VIEW AND DISSIPATE ABOUT 20 FRAMES.
96716	EDER	EXACTA	THREE FAIR RECORDS OF AURORA AND SKYGLOW.
96717	XR	GRAPHIC	THREE OF SIX EXPOSURES SHOWS RECORD.
96718	EDER	ROBOT	TWENTY-FIVE FRAMES SHOWING FIREBALL RISING OVER HORIZON ABOUT LATE-TIME SKY.
96719	KDII	GSAP	NO RECORD.

TABLE 3.10 STATISTICAL SUMMARY OF STAR FISH PRIME CAMERA RECORDS FROM THE BURST AREA

Station	Number of Cameras	Number of Useful Records	Reasons for no Records			Reasons for Poor Records			Percent Success
			Mechanical Failure	Inappropriate Camera Parameters	Error in Shot Location	Inappropriate Camera Parameters	Error in Shot Location	Other	
J-820	24	13	0	3	0	8	0	0	54
Aircraft 53120	20	9	0	4	0	7	0	0	45
Aircraft 53144	20	10	0	2	0	8	0	0	50
Totals	64	32	0	9	0	23	0	0	--
							Overall Success		50

TABLE 4.9 STATISTICAL SUMMARY OF CHECKMATE CAMERA RECORDS FROM THE BURST AREA

Station	Number of Cameras	Number of Useful Records	Reasons for no Records			Reasons for Poor Records			Percent Success
			Mechanical Failure	Inappropriate Camera Parameters	Error in Shot or Aircraft Location	Inappropriate Camera Parameters	Shot or Aircraft Location	Other	
Aircraft 53120	20	17	1	1	1	1	0	0	85
Aircraft 50376	20	11	2	1	6	3	0	0	55
Johnston Island	26	23	0	2	0	4	0	0	88
Totals	66	51	3	4	7	8	0	0	--
							Overall Success		77

TABLE 5.7 STATISTICAL SUMMARY OF BLUE GILL TRIPLE PRIME CAMERA RECORDS FROM THE BURST AREA

			Reasons for no Records			Reasons for Poor Records			
Station	Number of Cameras	Number of Useful Records	Mechanical Failure	Inappropriate Camera Parameters	Error in Shot Location	Inappropriate Camera Parameters	Error in Shot Location	Other	Percent Success
J-820	26	23	3	0	0	0	0	0	88
Aircraft 53120	20	16	4	0	0	0	0	0	80
Aircraft 60376	20	20	0	0	0	0	0	0	100
Totals	66	59	7	0	0	0	0	0	--
							Overall Success		89

TABLE 6.10 STATISTICAL SUMMARY OF KING FISH CAMERA RECORDS FROM THE BURST AREA

Station	Number of Cameras	Number of Useful Records	Reasons for no Records: Mechanical Failure	Reasons for no Records: Inappropriate Camera Parameters	Reasons for no Records: Error in Shot Location	Reasons for Poor Records: Inappropriate Camera Parameters	Reasons for Poor Records: Error in Shot Location	Reasons for Poor Records: Other	Percent Success
J-820	26	24	0	0	1	1	0	0	92
Aircraft 53120	20	19	1	0	0	0	0	0	95
Aircraft 60376	20	16	0	4	0	0	0	0	75
Totals	66	59	1	4	1	1	0	0	--
							Overall Success		89

TABLE 7.9 STATISTICAL SUMMARY OF TIGHT ROPE CAMERA RECORDS FROM THE BURST AREA

Station	Number of Cameras	Number of Useful Records	Reasons for no Records			Reasons for Poor Records			Percent Success
			Mechanical Failure	Inappropriate Camera Parameters	Error in Shot Location	Inappropriate Camera Parameters	Error in Shot Location	Other	
J-820	26	24	1	0	1	0	0	0	92
Aircraft 53120	20	5	2	0	5	2	6	0	25
Aircraft 60376	20	5	0	0	6	0	9	0	25
Totals	66	34	3	0	12	2	15	0	--
							Overall Success		51

TABLE 8.9 STATISTICAL SUMMARY OF STAR FISH PRIME CAMERA RECORDS FROM THE SOUTHERN CONJUGATE AREA AND MAUNA LOA

Station	Number of Cameras	Number of Useful Records	Reasons for no Records					Percent Success
			Weather	Mechanical Failure	Inappropriate Camera Parameters	Oriented for Unexpected Effects	Other	
Samoa	23	22	0	0	0	1	0	95
Fiji	4	1	3	0	0	0	0	25
Tonga	4	4	0	0	0	0	0	100
Mauna Loa	7	5	0	2	0	0	0	71
Totals	38	32	3	2	0	1	0	--
						Overall Success		84

TABLE 8.24 STATISTICAL SUMMARY OF CHECK MATE CAMERA RECORDS FROM THE SOUTHERN CONJUGATE AREA AND MAUNA LOA

Station	Number of Cameras	Number of Useful Records	Reasons for no Record					Percent Success
			Weather	Mechanical Failure	Inappropriate Camera Parameters	Oriented for Unexpected Effects	Other	
Samoa	32	7	0	1	19	5	0	22
Fiji	7	0	7	0	0	0	0	0
Tonga	7	0	7	0	0	0	0	0
Mauna Loa	16	6	0	0	10	0	0	38
Totals	62	13	14	1	29	5	0	--
						Overall Success		21

TABLE 8.36 STATISTICAL SUMMARY OF BLUE GILL TRIPLE PRIME CAMERA RECORDS FROM THE SOUTHERN CONJUGATE AREA AND MAUNA LOA

Station	Number of Cameras	Number of Useful Records	Reasons for no Records: Weather	Mechanical Failure	Inappropriate Camera Parameters	Oriented for Unexpected Effects	Other	Percent Success
Samoa	32	20	0	0	5	7	0	63
Fiji	7	0	7	0	0	0	0	0
Tonga	7	2	0	0	4	0	1*	29
Mauna Loa	17	0	0	0	0	0	17**	0
Totals	63	22	7	0	9	7	18	--
							Overall Success	35

*Unknown

**Effects below horizon

TABLE 8.49 STATISTICAL SUMMARY OF KING FISH CAMERA RECORDS FROM THE SOUTHERN CONJUGATE AREA AND MAUNA LOA

Station	Number of Cameras	Number of Useful Records	Reasons for no Records					Percent Success
			Weather	Mechanical Failure	Inappropriate Camera Parameters	Oriented for Unexpected Effects	Other	
Samoa	22	0	22	0	0	0	0	0
Fiji	7	0	7	0	0	0	0	0
Tonga	6	0	6	0	0	0	0	0
Mauna Loa	17	12	0	0	3	1	1*	71
Totals	52	12	35	0	3	1	1	--
						Overall Success		23

*Unknown

TABLE 9.4 SUMMARY OF STAR FISH PRIME SPECTROGRAPHIC RECORDS

Instrument	Location	Film Number	Film Type	Results
JACO 1.5M	Aircraft 53144	93105	HSIR	Weak spectrum of molecular air fluorescence
Model 70	Aircraft 53144	93128	TXA	No record
JACO 75-000 Prog	Aircraft 53144	93130	I-F	Frame 1 (0-1 sec) shows moderately strong molecular air fluorescence
JACO 1.5M	Aircraft 53120	93205	HSIR	No record
Model 70	Aircraft 53120	93228	TXA	Good record for 30 milliseconds. Bomb continuum for 30 microseconds followed by line spectrum of debris, Pods S-1 and S-2, and Thor booster
JACO 75-000	Aircraft 53120	93230	I-F	No record
JACO 1.5M (UV)	Johnston Island	93305	103-0-UV	Strong bomb debris continuum and molecular air fluorescence
JACO 75-000 Cine	Johnston Island	93330	DXN	Single frame exposed. Shows NI, NII, N_2^+ and N_2 First positive series
JACO 75-000 Cine	Johnston Island	93331	DXN	No record
JACO 75-000 Prog	Johnston Island	93333	103-0-UV	Frame 1 (0-1 sec) shows molecular air fluorescence. Three successive exposures show only forbidden NI transition at λ3466.4Å
Mock Interferometer	Johnston Island	93339	Magnetic Tape	Record not reduced

TABLE 9.5 STATISTICAL SUMMARY OF STAR FISH PRIME SPECTROGRAPHIC RECORDS

Station	Number of Spectro-graphs	Number of Useful Records	Reasons for no Records			Reasons for Poor Records			Percent Success
			Mechanical Failure	Inappro-priate Spectro-graph Parameters	Error in Shot or Aircraft Location	Inappro-priate Spectro-graph Parameters	Error in Shot or Aircraft Location	Other	
J-820	5	3	0	0	1	0	0	1*	75
Aircraft 53120	3	2	1	0	0	0	0	0	67
Aircraft 53144	3	1	0	1	1	0	0	0	33
Totals	11	6	1	1	2	0	0	1	--
							Overall Success		54

*Magnetic Tape Records from the Mock Interferometer have not been analyzed.

TABLE 9.12 SUMMARY OF CHECK MATE SPECTROGRAPHIC RECORDS

Instrument	Location	Film Number	Film Type	Results
JACO 1.5M	Aircraft 53120	94105	HSIR	No record
Model 70	Aircraft 53120	94128	TXA	No record
JACO 75-000 Prog	Aircraft 53120	94130	I-F	No record
Model 70	Aircraft 60376	94228	TXA	No useful record
JACO 1.5M(UV)	Johnston Island	94305	103-0-UV	Record marred in processing. Some useful spectral data obtained.
JACO 75-000 Cine	Johnston Island	94330	DXN	Excellent atomic and molecular air spectrum obtained in emission. Exposure integrated over first 10 minutes.
JACO 75-000 Cine	Johnston Island	94331	DXN	No record
JACO 75-000 Prog (UV)	Johnston Island	94333	103-0-UV	Excellent record obtained: 0-1 sec exposure shows molecular and atomic air emission and atomic metallic emission. A weaker atomic metallic and air emission spectrum was recorded from 3-90 sec. The forbidden NI line at 3466.4 Å is tentatively identified at both times.
JACO 1.5M (IR)	Johnston Island	94337	IRA	No record
JACO 75-000 Prog (IR)	Johnston Island	94338	I-N	Weak atomic air emission spectrum on 0-1 sec exposure. On 3-90 sec exposure only the OI Triplet at 7775 Å was recorded.
Mock Interferometer	Johnston Island	94339	Magnetic Tape	Record not reduced

TABLE 9.13 STATISTICAL SUMMARY OF CHECK MATE SPECTROGRAPHIC RECORDS

Station	Number of Spectro-graphs	Number of Useful Records	Reasons for no Records: Mechanical Failure	Reasons for no Records: Inappro-priate Spectro-graph Parameters	Reasons for no Records: Error in Shot or Aircraft Location	Reasons for Poor Records: Inappro-priate Spectro-graph Parameters	Reasons for Poor Records: Error in Shot or Aircraft Location	Reasons for Poor Records: Other	Percent Success
J-820	7	3	0	1	2	1	1	1*	43
Aircraft 53120	3	0	1	0	2	0	0	0	0
Aircraft 60376	1	1	0	0	0	0	1	0	100
Totals	11	4	1	1	4	1	2	1	--
							Overall Success		36

TABLE 9.19 SUMMARY OF BLUE GILL TRIPLE PRIME SPECTROGRAPHIC RECORDS

Instrument	Location	Film Number	Film Type	Results
JACO 1.5M	Aircraft 53120	95105	HSIR	Very weak spectrum of first 100 microseconds showing air fluorescence.
Model 70	Aircraft 53120	95128	TXA	No Record
JACO 75-000 Prog	Aircraft 53120	95130	I-F	Weak exposure obtained between 18 and 28 seconds showing molecular air fluorescence bands and All lines at 3947Å and 3961Å. A second exposure 30-60 seconds shows only the N_2 bands at 3371.3Å and 3576.9Å, and the N_2^+ band at 3914.4Å.
Model 70	Aircraft 60376	95228	TXA	Excellent record with a time resolution of 4 microseconds showing atomic and molecular air fluorescence lasting no longer than 4 microseconds, followed immediately by a continuum showing strong atomic air absorption until 26 milliseconds, followed by atomic air emission.
JACO I.5M (UV)	Johnston Island	95305	103-0-UV	Excellent spectrum of the first 100 microseconds showing N_2 and N_2^+ emission bands and a weak continuum with NII lines in absorption.
JACO 75-000 Cine	Johnston Island	95330	PX	No Record
JACO 75-000 Cine	Johnston Island	95331	PX	No Record
JACO 75-000 Prog (UV)	Johnston Island	95333	103-0-UV	Excellent record, somewhat marred by a light leak. First frame (0-1 sec) shows strong continuum; 2nd frame (3-4 sec) shows moderate air emission, molecular and atomic, as well as atomic copper emission; 3rd frame (6-8 sec) as 2nd frame except stronger, also aluminum atomic emission; 4th frame (10-145 sec) still stronger; 5th frame, (16-29 sec) even stronger, atomic emission more prominent; 6th frame, 31-90 sec very strong, mainly atomic air emission spectrum. Clearly indicates fireball rising into field of view.
JACO I.5M (IR)	Johnston Island	95337	HSIR	No Record
JACO 75-000 Prog (IR)	Johnston Island	95338	I-N	No Record
Mock Interferometer	Johnston Island	95339	Magnetic Tape	Record not reduced

TABLE 9.20 STATISTICAL SUMMARY OF BLUE GILL TRIPLE PRIME SPECTROGRAPHIC RECORDS

Station	Number of Spectro-graphs	Number of Useful Records	Reasons for no Records			Reasons for Poor Records			Percent Success
			Mechanical Failure	Inappro-priate Spectro-graph Parameters	Error in Shot or Aircraft Location	Inappro-priate Spectro-graph Parameters	Error in Shot or Aircraft Location	Other	
J-820	7	2	0	1	3	0	0	1*	29
Aircraft 53120	3	2	1	0	0	1	0	0	67
Aircraft 60376	1	1	0	0	0	0	0	0	100
Totals	11	5	1	1	3	1	0	1	--
							Overall Success		45

*Magnetic tape records from the Mock Interferometer have not been analyzed.

TABLE 9.26 SUMMARY OF KING FISH SPECTROGRAPHIC RECORDS

Instrument	Location	Film Number	Film Type	Results
JACO I.5M	Aircraft 53120	96105	I-F	Excellent spectrum integrated over the first 8 seconds, showing atomic and molecular air emission.
Model 70	Aircraft 53120	96128	TXA	No record
JACO 75-000 Prog	Aircraft 53120	96130	I-F	Fairly well defined molecular air fluorescence spectrum was recorded on 0-2 sec exposure. An exposure from 3-15 sec recorded only the unresolved OI triplet at 3947Å and the OI line at 4368.30Å.
Model 70	Aircraft 60376	96228	TXA	Excellent time resolved atomic air emission spectrum from 2.8 milliseconds to 1.2 seconds. Molecular fluorescence of air (X-ray Teller light) seen at very beginning of record.
JACO 1.5M (UV)	Johnston Island	96305	103-0-UV	Outstanding record of the first 100 microseconds taken with burst imaged on slit. Shows spatially resolved zones of varying degrees of air ionization across the fireball image. Molecular nitrogen fills the entire length of the slit indicative of the large extent of air fluorescence.
JACO 75-000 Cine	Johnston Island	96330	DXN	No record
JACO 75-000 Cine	Johnston Island	96331	DXN	Excellent time resolved record lasting more than 1 second showing atomic air emission.
JACO 75-000 Prog (UV)	Johnston Island	96333	103-0-UV	Good record obtained on three frames: 0-1 sec, 3-8 sec, and 10-29 sec. First frame; exposures show extremely dense emission structure due to molecular nitrogen, atomic oxygen and nitrogen, and atomic aluminum, beryllium and calcium. Second frame; weaker exposure shows less molecular structure, less ionized air relative to neutral air, calcium and aluminum persist. Forbidden NI line at 3466.4 appears. Third frame; much weaker exposure, most lines due to OI, N_2^+ (3914Å) persists.
JACO I.5M (IR)	Johnston Island	96337	HSIR	A companion record to 96305 except in infrared showing similar zonal excitation effects.
JACO 75-000 Prog (IR)	Johnston Island	96338	I-N	A companion record to 96333 except in the infrared.
Mock Interferometer	Johnston Island	96339	Magnetic Tape	Record not reduced.

TABLE 9.27 STATISTICAL SUMMARY OF KING FISH SPECTROGRAPHIC RECORDS

Station	Number of Spectro-graphs	Number of Useful Records	Reasons for no Records: Mechanical Failure	Reasons for no Records: Inappro-priate Spectro-graph Parameters	Reasons for no Records: Error in Shot or Aircraft Location	Reasons for Poor Records: Inappro-priate Spectro-graph Parameters	Reasons for Poor Records: Error in Shot or Aircraft Location	Reasons for Poor Records: Other	Percent Success
J-820	7	5	1	0	0	0	4	1*	71
Aircraft 53120	3	2	1	0	0	0	0	0	67
Aircraft 60376	1	1	0	0	0	0	0	0	100
							Overall Success		72.7

*Magnetic tape records from the Mock Interferometer have not been analyzed.

TABLE 9.33 SUMMARY OF TIGHT ROPE SPECTROGRAPHIC RECORDS

Instrument	Location	Film Number	Film Type	Results
JACO 1.5M	Aircraft 53120	97105	HSIR	Very weak record, exposed for the first 8 seconds showing continuum with Schummann-Runge O_2 absorption bands; possibly weak fluorescence emission.
Model 70	Aircraft 53120	97128	TXA	No record
JACO 75-000 Prog	Aircraft 53120	97130	I-F	First 2-sec exposure is extremely weak, showing some absorption structure. Not a very useful record.
Model 70	Aircraft 60376	97228	TXA	Weak record showing a double peak during the first millisecond with a minimum at 1/2 millisecond. Absorption due to NII is seen in the first peak, lasting about 0.2 millisecond. After 1 millisecond the record is extremely weak, significant exposure not returning until about 15 milliseconds, grows until 50 milliseconds and then decays. No record after 100 milliseconds. Absorption structure due to neutral atomic nitrogen and oxygen is recorded in the last phase of the record.
JACO 1.5M (UV)	Johnston Island	97305	103-0-UV	First 100-microsecond exposure shows N_2 emission, O_2 Schummann-Runge and OI absorption, and AlI emission.
JACO 75-000 Cine	Johnston Island	97330	PX	Six seconds of time-resolved record. Zero frame shows strong continuum followed by 2 weak frames. By the third frame (less than 10 millisec) gradual brightening begins, and absorption due to atomic air and N_2^+ is evident. At 70 milliseconds the absorption structure fades into the continuum, and immediately an emission spectrum appears due to N_2^+ and a few atomic lines which were present earlier. Later, bands due to AlO appear in emission, and along with air lines persist until the end of the record.
JACO 75-000 Cine	Johnston Island	97331	PX	Same as 97330. Record extends to longer wavelengths.

TABLE 9.33 SUMMARY OF TIGHT ROPE SPECTROGRAPHIC RECORDS (Continued)

Instrument	Location	Film Number	Film Type	Results
JACO 75-000 Prog (UV)	Johnston Island	97333	103-0-UV	An excellent record. Exposures made at 0-1 second, 3-8 seconds, 10-29 seconds, 31-90 seconds, and 90-300 seconds and 302-915 seconds. First frame heavily over-exposed, although broad diffuse emission is observed between frame 1 and 2 (+1 second to +3 seconds), which may be due to ionized atomic air. The second frame shows a very strong continuum but with emission lines due to Fe, Al, Cu, and prominent AlO emission. In the third frame, the continuum has decreased in intensity, the metallic lines and bands persist, and O_2 Schummann-Runge emission is observed. The last 3 frames are molecular nitrogen fluorescence or "after glow".
JACO 1.5M (IR)	Johnston Island	97337	HSIR	No record
JACO 75-000 Prog (IR)	Johnston Island	97338	I-N	First frame is strong continuum with a few atomic air emission lines, the most prominent being the oxygen triplet at λ7772Å. The second frame shows, in addition to the air emission, metallic emission lines. The third frame continues to show strong metallic emission over a weak continuum, but the air lines are absent.
Mock Interferometer	Johnston Island	97339	Magnetic Tape	Record not reduced

TABLE 9.34 STATISTICAL SUMMARY OF TIGHT ROPE SPECTROGRAPHIC RECORDS

Station	Number of Spectro-graphs	Number of Useful Records	Reasons for no Records: Mechanical Failure	Reasons for no Records: Inappro-priate Spectro-graph Parameters	Reasons for no Records: Error in Shot or Aircraft Location	Reasons for Poor Records: Inappro-priate Spectro-graph Parameters	Reasons for Poor Records: Error in Shot or Aircraft Location	Reasons for Poor Records: Other	Percent Success
J-820	7	5	0	1	0	1	0	1*	71
Aircraft 53120	3	0	1	0	0	0	2	0	0
Aircraft 60376	1	1	0	0	0	0	1	0	100
Totals	11	6	1	1	0	1	3	1	--
							Overall Success		54.5

*Magnetic tape records from the Mock Interferometer have not been analyzed.

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